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ISSUE 11 ■ JUNE 1990 ■ £2.95

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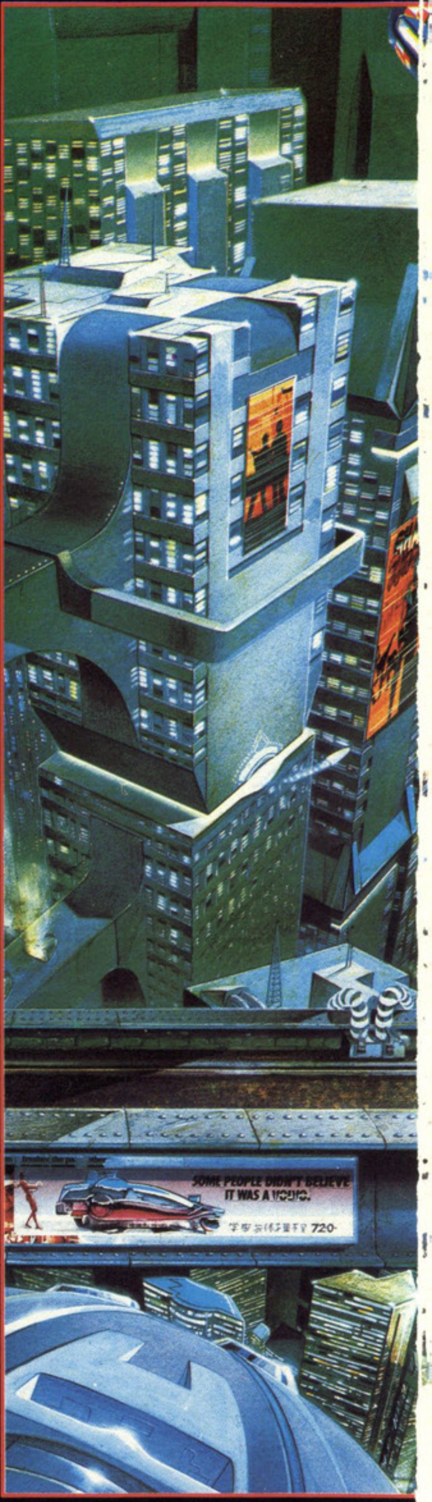
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FUTURE...











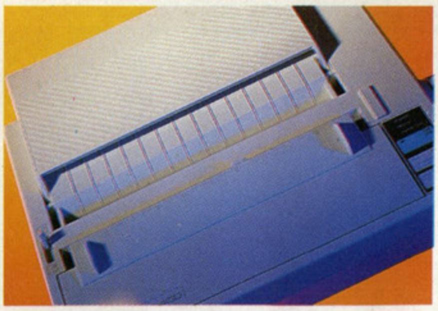
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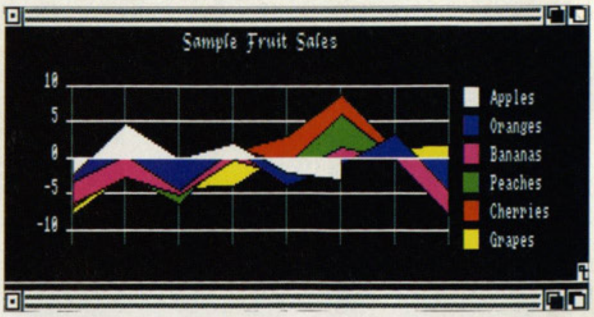
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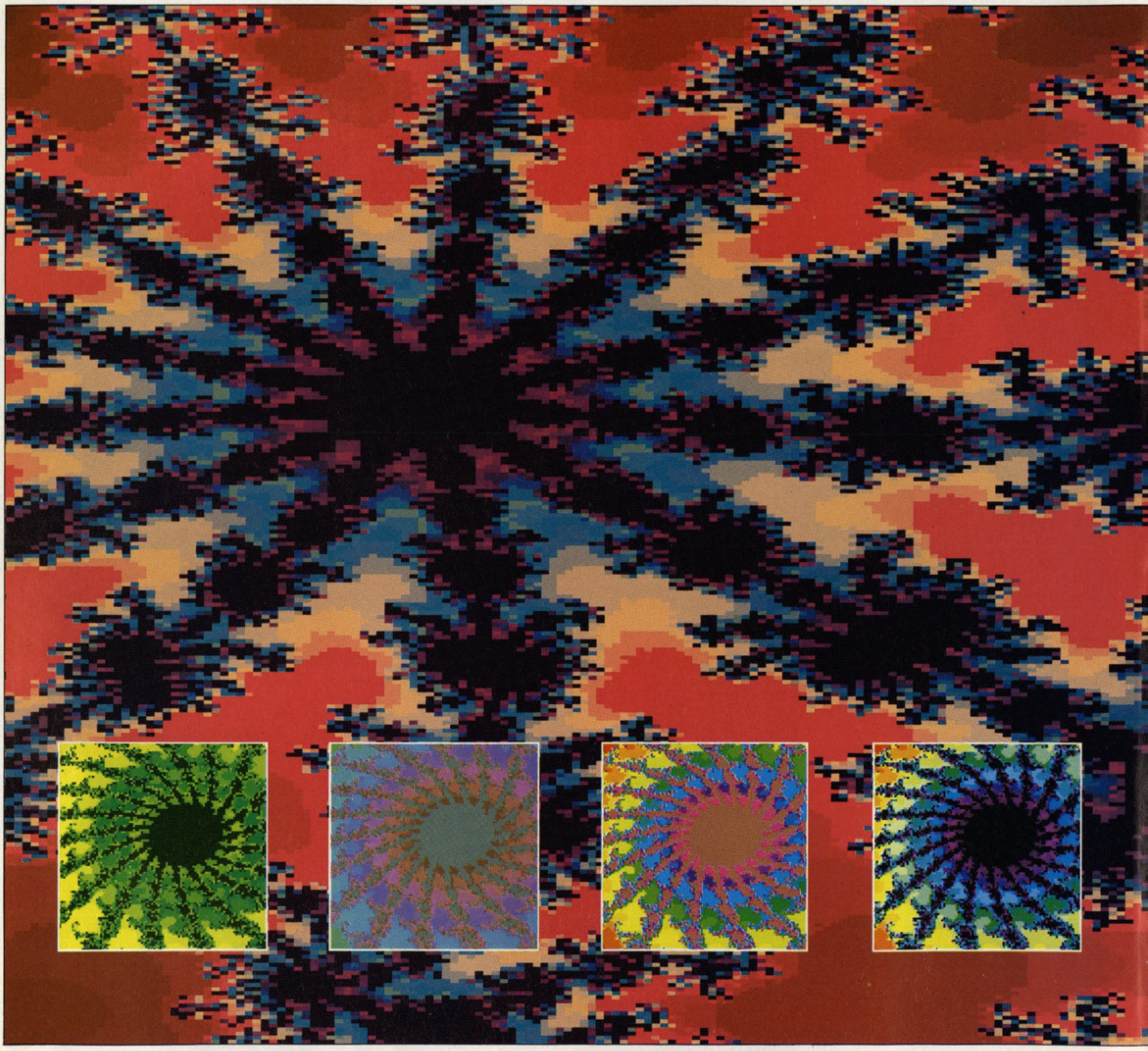
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AMIGA FORMAT
eleven
JUNE 1990

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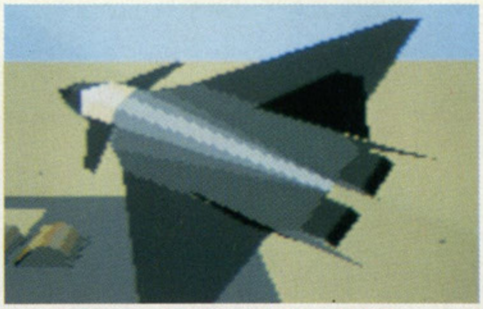
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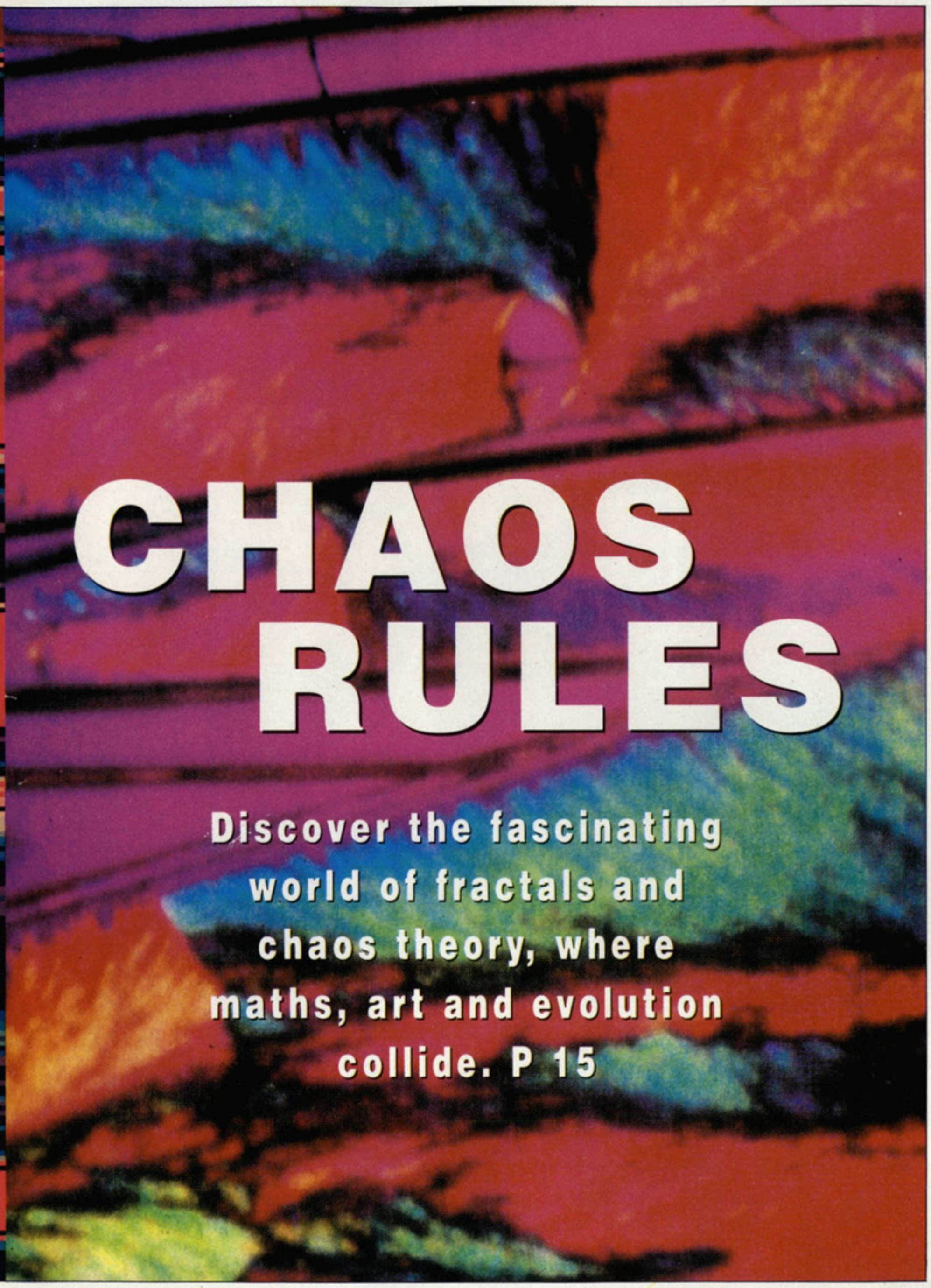
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Disk Extra

TOWER OF BABEL 111

FABULOUS 3D PUZZLE ACTION FROM RAINBIRD

AMOS: Full working demo of the most eagerly awaited Amiga utility ever ■ **FRACTALS:** A fractal generator to use in conjunction with our cover feature ■ **MENACE CODE:** Latest instalment of source code for budding game programmers ■ **JPDIR:** Access CLI commands from the Workbench ■ **OSK:** An on-screen keyboard that dispenses with the real thing ■ **SAUCER:** Another witty Workbench hack ■ **SHOOTOUT:** Wacky, bouncy blasting action.

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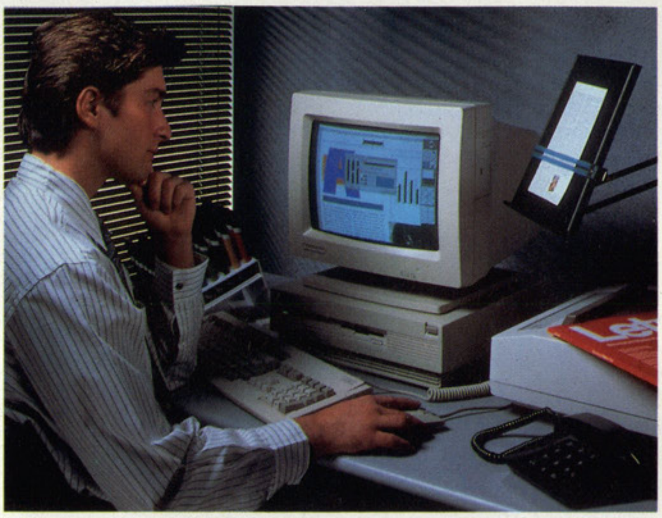
New top-notch Amiga is launched with £2,500 price-tag

Commodore have just announced the release of their most powerful Amiga yet in the shape of the Amiga 3000.

Contrary to popular belief, Commodore have totally redesigned many aspects of the machine to firmly point the machine at the low end Workstation market previously dominated by such big names as Sun and Apollo. Not only does the machine look totally different from any existing Amiga (it looks more like an IBM PS/2), but it offers many powerful and new additions to take the machine up to Workstation spec. However, don't think about trading in your A500 just yet because the base-level A3000 will set you back £2,500.

The machine is based around the powerful Motorola 68030 processor and is available with either a cheaper 16 MHz or a blisteringly fast 25 MHz clock speed. Although the machine does not utilise the 68040 as many expected, it features a special processor expansion slot for more powerful processors including the 68040 and a RISC processor. Backing up all this chip power is either a 68881 or a faster 68882 maths co-processor.

Also included as standard is either a 40Mb or a 100Mb 19ms SCSI hard drive. Just like the current 2000 model, the new 3000 supports the fitting of two 3 1/2 inch 880k disk drives. Internally, the 3000 offers four new 32-bit Zorro III expansion slots, 1 CPU/Cache slot and 1 video expansion slot. The new Zorro slots are downwardly compatible with the current Zorro II slots, allowing the 3000 to take advantage of Amiga 2000 cards.



Unlike current Amigas, the A3000 is a true 32-bit machine. Not only does the machine boast a 32-bit processor, but it comes as standard with 2 Mbs of super-fast 32-bit RAM that is split into 1Mb of Chip RAM and 1Mb of Fast RAM.

The A3000 board provides space for a further 1Mb of 32-bit Chip RAM and 3Mbs of 32-bit Fast RAM. The machine is also capable of expansion to a total of 16 Mbs of RAM. Impressive stuff!

Forget about AmigaDOS 1.4, because AmigaDOS 2.0 has arrived, as hinted by a high-level executive within Commodore. AmigaDOS 2.0 features improved icons, upgraded file locking, improved screen resolution – 640 x 480 productivity mode – and increased task security, so that's the last you'll see of the Guru!

The new 2.0 windowing interface is also considerably enhanced, offering a higher level of control over the Amiga and considerably faster screen rendering. From what we have seen of Workbench 2.0, the new WIMP system looks rather like a combination of the NeXT and Archimedes desktops.

Within the Workstation market, the current big name in operating systems is undoubtedly Unix. Commodore have signed an agreement with Unix licensor AT&T to release the very latest version of Unix (Version 4) in Amiga-compatible form. Commodore are actually the very first company to make this new version available, beating many established Unix vendors. ■

EMULATION SENSATION

DigiMail SRL, of Milano in Italy, have announced the impending release of what could possibly been seen as the most important emulator release for many years. Yes folks, if you though the Amiga QL Emulator was earth-shattering stuff, you aint seen nothing yet. Yes, Amiga fans, the seemingly impossible has been achieved.... The Amiga ZX Spectrum Emulator has arrived.

The Emulator is both software and hardware based and will happily work on both the A500 and B2000 (but not the A2000, for some unknown reason). DigiMail's little wonder consists of a hardware interface that allows the Amiga to load Spectrum programs directly from tape (I kid you not!), and then save them straight out to Amiga disks. The Emulator treats Amiga drives as Spectrum MicroDrives, thereby saving the tedium of contiuously loading from tape.

According to DigiMail, the emulator will run virtually all Spectrum 48K software including all popular games titles. Although DigiMail's product does not run quite as fast as a real Spectrum (does any emulator?), the emulator features a black-and-white mode which increases the performance of the emulator to a level that more than matches the real McCoy.

Not only do you get a complete Spectrum, but the emulator even includes several extra facilities including a game freezer, Kempston Interface emulation (allowing you to make use of your Amiga joysticks) and full printing capabilities.

Although such an emulator may seem about as useful as a deep freeze in the Antarctic, I'm sure there are many ex-Spectrum owners who had to scrap their software collections when they upgraded to an Amiga. For these people alone, such an emulator could prove to be a boon.

DigiMail, Milano, Italy
☎ 39 02426559.

MAGNETIC SCROLLS CHASE RABBITS

New Virgin signees and adventure supremos Magnetic Scrolls have announced a new game, *Wonderland.*

The game has been two years in development and is based on the best-selling Lewis Carroll stories about Alice and her adventures. Magnetic Scrolls have something of a reputation in the adventure world for the excellent graphics and complex plots in their games. *Wonderland* promises to just as good-looking and complex as the rest, but uses a new system which the 'Scrolls have been working on.



Magnetic Windows features such wonders as multiple windows, pop-up menus of appropriate commands, icons for every object and location in the game, on-screen help and auto-mapping. *Wonderland* will be available from all good software shops priced £29.99

DIGIPAINT GETS ANIMATED

Mindware International have announced the release of *DigiMate 3*, an add-on product for NewTek's acclaimed paint system, *DigiPaint 3. DigiMate 3* allows the creation of animations using imagery created using *DigiPaint 3*. These animations are stored in standard IFF ANIM format, therefore allowing them to be imported into other animation systems with ease.

DigiMate runs under an advanced message passing system called TASS which allows the interaction of multi-tasking programs.

No longer do your animations need to be restrained by the amount of memory available. *DigiMate* uses an exclusive DiskANIM system that allows animations to extend the capacity of your hard drive. Features include powerful picture conversion tools which allows any picture (regardless of format) to be converted to EHB, 32 colours, HAM and overscan.

+++STOP PRESS+++

Just as we were going to print, Electronic Arts announced a name change. The game *Tribal* (for details see Previews) is now to be called *Projectyle.*

BETTER THAN SLICED BREAD

Amiga is named 'Computer of the Year' as Electronic Arts, Citizen and Commodore scoop major awards at the European Computer Trade Show.

Smiles abounded at Electronic Arts recently when the UK branch was voted 'Best Software Publisher' in Europe at the same time as the US parent company was granted the same title in the States.

The US award was a tribute from the Computer Games Developer's Conference, but the European award was voted by a panel of the best computer magazines in Europe, including *Amiga Format, ST Format* and *Your Sinclair* from Britain, *Tilt* in France, *Powerplay* of Germany, Spaniards *Micro Mania*, American magazine *Compute!* and the Japanese magazine *Log-In.*

EA also received three awards for Bullfrog's *Populous,* including 'Game of the Year', and two for the excellent *Deluxe Paint III* which won 'Best Graphics Program' and 'Best Product for the Amiga'.

The Amiga won perhaps the principal accolade when it was declared 'Computer of the Year' in the Home Productivity section, although this will come as no great surprise to readers of *Amiga Format.* Another big success was Citizen's Swift 24 printer, now officially the 'Printer of the Year'.

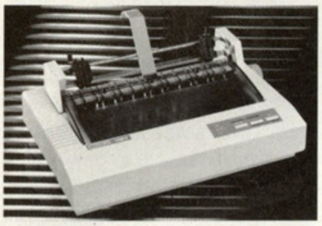
Other games that hit the high spots were *Space Ace* (Best Animation), *Shadow of the Beast* (Best Graphics), *Future Wars* (Best Sound), *Xenon II* (Best Shoot-em-up), the latest *Indiana Jones* (Best Adventure), *Chaos Strikes Back* (Best RPG), *F-16* (Best Flight Sim), *Kick Off* (Best Sports Sim) and *Sim City* (Best Educational). Ocean must have been pleased to see *Batman* (Best Action Game) and *Rainbow Islands* (Best Arcade Conversion and Title with Most Chart Potential) doing well. Quite a high-class line-up, but of course we would always be interested to hear what you would have voted for. Write in to our Letters pages...

DESIGNER MOUSEWARE

You've all heard of Shareware and Public Domain: well now there's Charityware, a new concept invented and introduced by *Amiga Format* writer and programmer, Mark Smiddy.

Mark has been hard at work updating his *Sleepy* program to include support for animated sleepy sprites, etc. *Sleepy 3* has been placed into the PD libraries and will be distributed under the new Charityware concept. If you find the program useful you are requested to send a donation to a charity of your choice. For *Sleepy,* Mark suggests sending donations to the Spastics Society.

Ray Burt-Frost ☎ 0703 785680



BETTER THAN THE BEST

Citizen could already boast that the 120D has been the best-selling 9-pin printer in Europe for a massive four years (see the Printers feature on Page 31), but rather than rest on their laurels they have improved it further. New additions are two NLQ fonts, Courier and Display, 'quad' high-density print (thanks to a new kind of ribbon) and new form lengths of 8, 11 and 12 inches.

Citizen Customer Response ☎ 0895 72621

NO STRINGS ATTACHED

Sick and tired of tangled wires? Want to sit back and play your computer games from a comfy armchair? A powerful piece of technology, the new Spectravideo IR Infra-Red joystick uses a similar system to TV remote controls to allow you to play games from a range of up to 30 feet. A bit of a luxury at £39.95, but certainly one to impress your friends with if you can afford it.

Spectravideo ☎ 01 900 0024





THE GENESIS PROJECT

Fancy a bit of planet creation to take your mind off of the greenhouse effect and the general state of planet Earth? If so, then Microlllusions' *Genesis* could well be the program for you.

Genesis is a fractal landscape generator written by the author of Microlllusions' successful *Pro-Video* series of products. The program allows the generation of an endless number of landscapes. According to Microlllusions, the program abides by all the rules of nature, therefore producing almost photographic images.

No further details are currently available but Microlllusions are hoping to have the program all ready in time for a June release.

MAKE YOUR MOUSE LAST

Simpson Electronics of Derby have just moved into the computer field and are keen to make themselves known with a special offer on the conversion of your mouse to micro-switching. Proprietor Paul Simpson, a self-confessed shoot-em-up fan, sympathises with mouse wear problems but says his conversion, costing only £12.95 including postage and a guarantee, will last for at least 200,000 operations – which should be enough for many a game of *Operation Wolf.* A good alternative to splashing out on a new mouse.

Simpson Electronics, Derby ☎ 0332 760353

CALLING ALL GFA USERS

You may not know it, but if you use GFA products there is an entirely independent magazine made just for you. *GFA User Magazine,* produced for users by users, is published bi-monthly and printed professionally, it says here.

Now to the crux – the mag runs a telephone help service, but finds its current helpers are biased towards the ST. So if you are an Amiga-owning GFA user and would like to share your expert knowledge with others, please get in touch with John Peters or Barrie Capel at the mag.

GFA User Magazine, Crewe, Cheshire ☎ 0270 256429 *Email* gfa@cix

MIDI MARVEL

Omega Projects have done it again! After the recent release of their successful sound sampler, Sound Trap III, the Cheshire-based company have released another new product in the form of MiniMIDI, probably the world's smallest ever MIDI interface produced for the Amiga.

The Interface consists of a single 25-pin connector which plugs into the serial port of the Amiga and two, one-metre lengths of lead that connect to the MIDI IN and MIDI OUT DIN sockets on any standard MIDI keyboard. Selling at just under £25, MiniMIDI is also one of the cheapest interfaces available. Not only that, but MiniMIDI is even better value when you consider that you don't have to fork out for MIDI leads – the interface has them as standard.

Bytes & Pieces ☎ 0253 714141

GOLD DISK GOODIES ARE GO

Gold Disk have announced the release of several new products for the Amiga to further extend their impressive range of desktop productivity software.

First up is *ShowMaker,* a powerful multi-media presentation generator that lets anyone build continuous, self-running presentations incorporating internally or externally-produced text, images, computer graphics, animations, music, video and audio.

ShowMaker lets you use the Amiga to manipulate and establish communication with literally any external device you want – ranging from laser disk players to MIDI keyboards. *ShowMaker* will also preview and print storyboards and queue sheets of your presentation.

Furthermore, *ShowMaker* comes with a special facility that gives you very accurate control of a presentation's timing, therefore allowing you to synchronise both audio and video.

Also up and coming from Gold Disk is a collection of AGFA/Compugraphic outline fonts for use with Gold Disk's successful desktop publishing packages *Professional Page, PageSetter 2* and ProDraw.

HB Marketing ☎ 0753 686000

CAN IT BE TRUE?

Next month, we celebrate a year of *Amiga Format* with a special give-away on the cover. Not only will you find the Coverdisk taped to the front of the magazine, but also a free audio cassette! How do we do it? Yours not to reason why – just make sure to buy *Amiga Format* Issue Twelve!

CHARLIE THE DOG AND MICKEY MOUSE SLUG IT OUT

Disney and Bluth in competition in the games market

Work is currently under way in the US on a new Sullivan Bluth game, *All Dogs Go To Heaven,* based on the hit film of the same name.

Sullivan Bluth are very well known to the general public as film makers, but are even more familiar to Amiga owners for their colourful animated games *Dragon's Lair* and *Space Ace.*

The games are actually coded by other companies, such as Americans Merit Software who are coding *All Dogs,* and in the past the games have been slammed by some critics not just because of the high prices punters have been expected to pay – around the £45 mark for the games mentioned earlier – but also because the games were little more than graphics demos.

This is all about to change though as Sullivan Bluth are determined to get more gameplay in and generally improve the quality of their product which is why a new subsidiary, Sullivan Bluth Interactive Media, have been working much more closely with the various programming teams. We'll be able to judge the improvements for ourselves very soon as *All Dogs* should be released by the time you read this at a much reduced price of £24.95.





Ex-Disney people Don Bluth and Gary Goldman, the driving force behind Sullivan Bluth, will not be pleased to learn that arch rivals Walt Disney are also planning to releasing computer software.

A new label is to be launched, called Disney Software, which will be bringing us the first of a planned eight titles in the autumn. Disney are not so much concerned with pure games, though, as they're planning to become Europe's leading publisher of educational software and will be using Disney's leading characters to appeal to children.



Football Crazy!

It's hard to imagine how you could make it through June and July without this latest innovation from joystick manufacturers Dynamics. Yes, as World Cup fever rages, you can play your fave footie game with a Competition Pro Goal joystick in the colours of the national team you support!

Smart bets for good sales are the England colours (red and white), Scotland (dark blue and white), Brazil and West Germany. Less popular may be Italy, Spain, Belgium, Holland and the US of A. Most unlikely contender is the Swedish stick – Sweden's best performance to date was as runners-up to Brazil in 1958...

Dynamics ☎ 061 626 7222

RIGHT: The now-familiar impressive white monolith of the Commodore stand.

This year, CeBIT was host to more than 3500 exhibitors from over 40 countries and more than 500,000 visitors. Germany now contributes almost 30% of Commodore sales worldwide and all products sold in Europe are assembled in Braunschweig, West Germany. The rest of Europe accounts for 40% while the North America comes up to only 20%. Amiga machines now account for 50% of sales, PC line for 30% and other products for 20% of worldwide sales.



GERMANY CALLING

The CeBIT show in Hannover, West Germany, is the largest computer fair in the world. Don Maple reports.

NO AMIGA 3000

But what about the Amiga 3000? Not only did it fail to materialise, but Commodore didn't even mention the new computer by name. In answer to a direct question about the A3000, head of Commodore Europe Irving Gould answered: "Nothing! But many new exciting products are to be announced this fiscal year and you can make your own suppositions from that". Pressed for a date he replied: "We have decided that we will only announce a new product when we can give specific delivery dates".

Star of the Amiga stand was the Amiga 2500/30 with a Motorola 68030 running at 25 megahertz, a matching 68882 math coprocessor and three megabytes of RAM as standard. The price for all this in Germany is just over DM 10,000 (£3700).

MUSICAL FUN FOR ALL

A fun music bundle has arrived. "Funlab" – a joint effort by Commodore, Kawai and Steinberg – is a complete MIDI system incorporating both hardware and software. Kawai supplies the 61-key synthesizer which is actually an FS-680 with added features.



The complete Funlab package incorporating the Kawai Funlab keyboard, Steinberg software and the Amiga.

Steinberg custom-wrote the software which is Funlab-specific and will only work with this synth. The main feature of the package is "one finger ad lib", where the user selects the rhythm, presses one key and the synth does the rest. Funlab also sports a disk based "juke-box". The complete package incorporating the Funlab synth, MIDI interface and software is an attractive offering at £370.

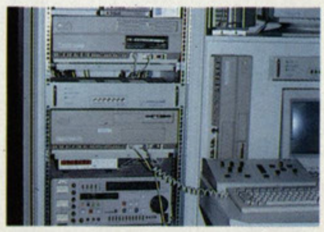
VIDEO JUKEBOX

Videocomp was definitely the main attraction dominating the Amiga stand. Its "wall" of video equipment stretched about 50 feet wide with a giant multi-screen display towering above it.

"G100" is a professional genlock device for studio-quality production. It will set you back about £8500, but the resulting animation has to be seen to be believed!

"VESone" is a video mixer with a built-in "Digi-View 4.0" digitizer and a genlock. A character generator and paintbox software help it live up to its "all in one" label.

"Miranim" is an interactive, programmable 3D animation system employing the so-called "algorithmic animation". The program also includes extensive modelling capabilities and the objects, called "Actors", are animated using "CineMira-2", a special sub-language. "MiraShading", compris-



Just a few "bricks" in the Videocomp "wall of video".

ing a library and a programming language, is used to create various types of graphic output ranging from simple wireframe to complex images with 16 million colours. Both programs are available in English but Videocomp and ArTTec currently have no UK distributor.



Videocomp's "all in one" video mixer, digitizer and genlock, the VESone. This gadget really is a jack of all trades.

MAKING MOVIES

"Virtual Motion" camera system control, by Panasensor, transformed their stand into a mini film studio all under the control of an Amiga. The hardware comprises nine motors, each with its own processor. Six motors drive the camera, with the other three used for the model or anything else!

The computer software is not only capable of accurately retracing all movements but can also advance the film directly. After specifying reference points on the screen, the Amiga extrapolates the movements automatically. The system is not for sale but can be rented as a part of the Panasensor production setup.

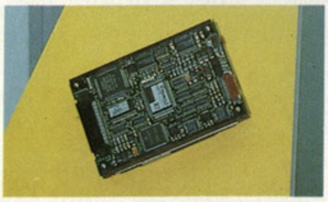


Panasensor's "Virtual Motion" system, with motor control of cameras, puts the Amiga firmly in control during film production.

AMIGA LAPTOP IN THE WINGS?

Gigatron, a German company making Amiga add-ons, was rumoured to be about to unveil an Amiga compatible laptop! Günther Preuth, Gigatron's director, confirmed that the project is on track and spelled out the specs.

The laptop will sport a colour LCD screen and a track-ball instead of the mouse, with one megabyte of RAM as standard expandable to two and four megabytes internally. The 8-layer motherboard will have four slots for these RAM expansions as well as other cards. A 20 megabyte Gigatron hard disk will also be standard. The rechargeable battery will have a minimum life of 8 hours with a mains connector at the back. Finally, the laptop will be able to drive a large screen monitor as well. Current plans are for a £4500-£5500 price tag but this may change either way.



"GigaFix", a miniature internal 20 MB hard disk for the Amiga 500 manufactured by Gigatron, developers of a portable Amiga.



Günther Preuth, Gigatron's director: it seems we will have an Amiga laptop this year, with or without Commodore!

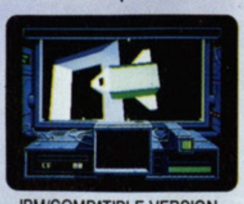


MINDSCAPE INTERNATIONAL

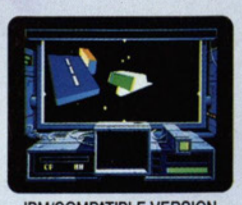
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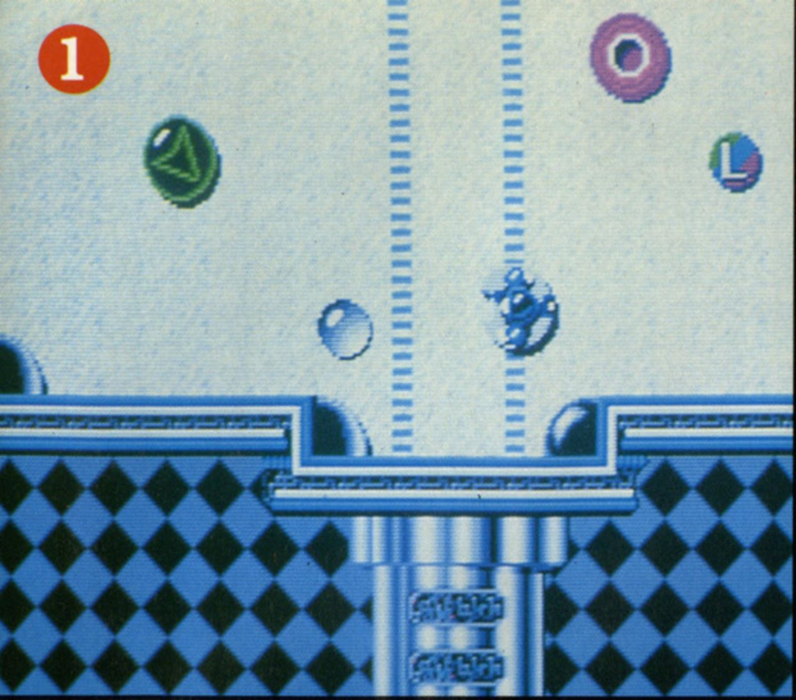
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COMING ATTRACTIONS

Just cast your peepers over these up and coming goodies and start saving your dosh, as **ANDY SMITH** reveals what's new and hot.

1 TRIBAL

Sports games are Electronic Arts bag at the moment with the imminent release of this futuristic multi-player game. It's fast and furious action all the way as three players at once battle with each other to knock a puck around the strange pitch and bash it into an opponent's goal.

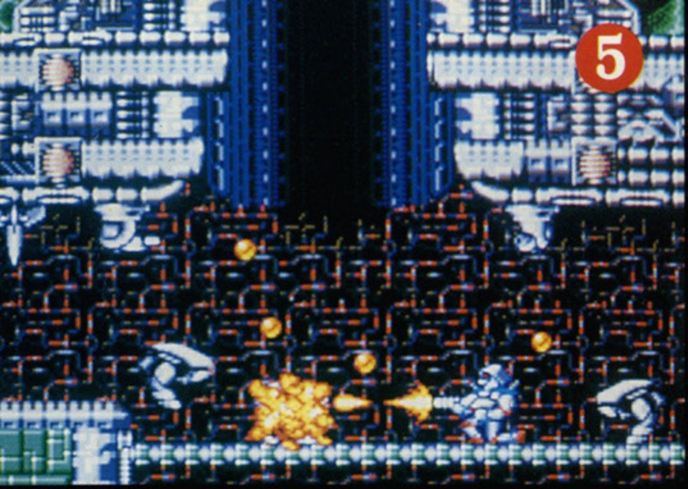
The game can handle up to eight teams competing in either a knock-out contest or in a league. The game can be tuned from a pure hectic arcade game to a more sedate version including statistics and tactics. Stay tuned sports fans!

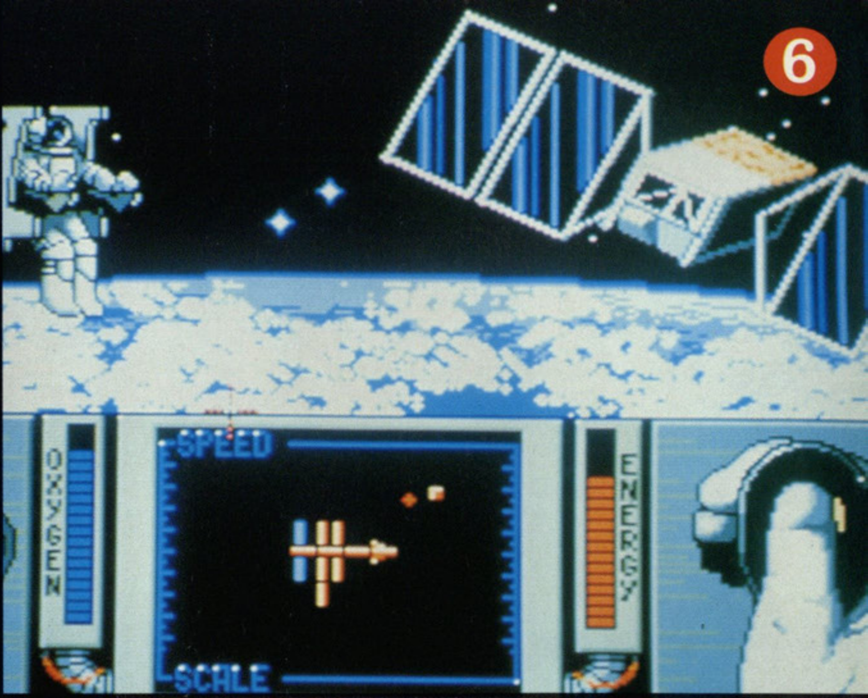
2 WORLD CHAMPIONSHIP SOCCER

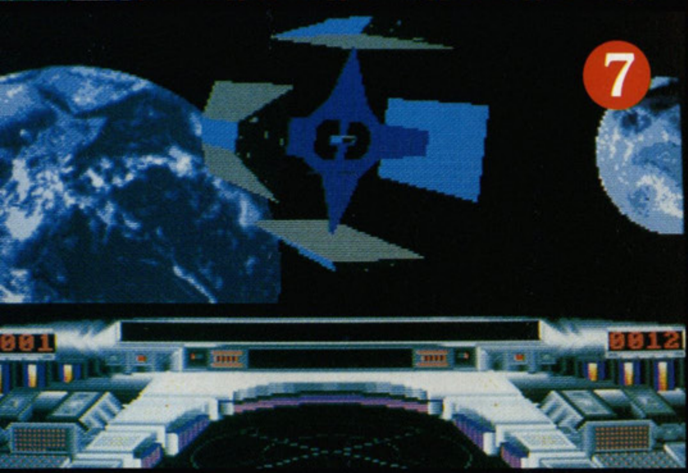
Sports games are Elite's bag at the moment (deja vu!) Just making it in time for the world cup will be this viewed from above soccer game for one or two players. It's licensed from Sega and features all the usual bits like corners, free kicks, men running around with a ball – that sort of thing. There are even some tactical bits where you can select your team before starting the five matches which might just take you to the final.

3 TOURNAMENT GOLF

Elite are also working on a golf game, another Sega conversion, for one or two players that allows you to play on three 18 hole courses. Choose your clubs but take account of the wind direction and alter your player's position while lining up for the shot, then keep your eyes on the strength meter while you make the shot and hope you don't end up in any of the bunkers, water, trees or rough. US Masters champion Nick Faldo may not have become an expert by playing this game, but with a bit of practice you could find yourself playing good enough golf to drive him off the fairway..











4 LAST BATTLE

Elite's third imminent game, a Sega conversion again, is a one player sideways scrolling beat-em-up. You have to make your way through over 30 stages of enemy territory punching and kicking baddies as they come at you with all manner of mean and nasty weapons. Leap and cavort around the screen taking out the baddies and moving through the stages until you come across and (hopefully) defeat the end of level guardians.

5 TURRICAN

Rainbow Arts reckon complex shoot-em-ups are the way of the future, so they've been busy working on one. Turrican features some 13 levels with over 1,000 screens and it's a sideways scrolling affair. There are a host of extra weapons to pick up and super-huge end of level guardians to destroy, which you would expect from such a game, but there are also secret rooms, extra levels and bonus rooms for the inquisitive player to discover.

6 MURDER IN SPACE

In space no-one can hear you shout 'Aaarrrrgggh-hhh!'. Amateur 'tecs out there will soon be able to test their deductive powers with this Infogrames game set in space in the year 2005. A murder is about to go down and it's down to you to find the perp' and the eight crew members. There's more to it than that though, the game relies on animated dialogues throughout and there are even arcade games to play, like when you have to manually pilot the station on which the game is set.

7 XIPHOS

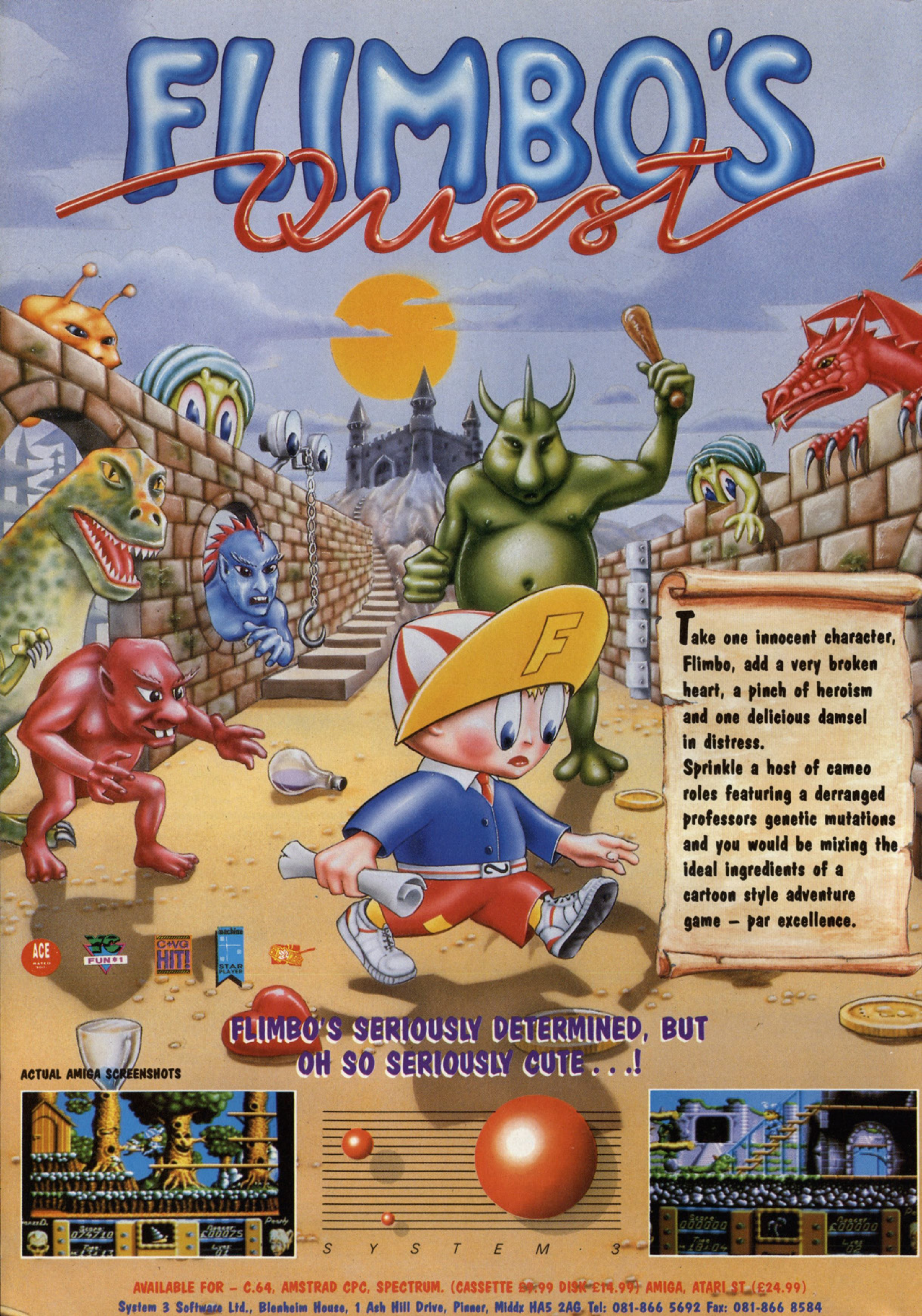
3D space odyssey fans will be pleased to know Electronic Zoo are working on just such a game. It's a mix of games with the ability to play it as a pure arcade game where you fly around blasting the enemy ships or you can play it in mission mode where you will have to do a lot more strategic thinking. Both games include digitised backdrops and surface detail on many of the 3D craft you meet within the game. There's a lot more too it than that though, as you will soon be able to discover for yourself.

8 DYNASTY WARS

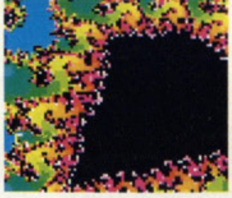
China around 184 AD was a riotous place apparently, so US Gold reckon it's just the place to set a chop-em-up. This one or two player coin-op conversion sees the player in the role of a rebel out to smash a bunch of warlords who have overthrown the Han Dynasty. There are eight levels to battle through and four characters to choose from, each with peculiar attributes which change as your warrior progresses through the game. Loads of jumping up trees backwards and slashing around with big swords here, hi-ya!

9 FINAL COMMAND

Ubi Soft have spent a long, long, time working on this adventure game set in the future. You play agent YG 30 on a mission to discover what's happened to a bunch of scientists who were building a teletransporter on the planet Ipsos III. Armed with a laser pistol, a mini computer and a telepathic headset can you solve the mystery in this great looking adventure?

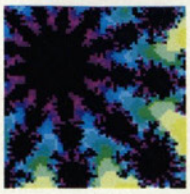


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THE chaotic WORLD OF fractals



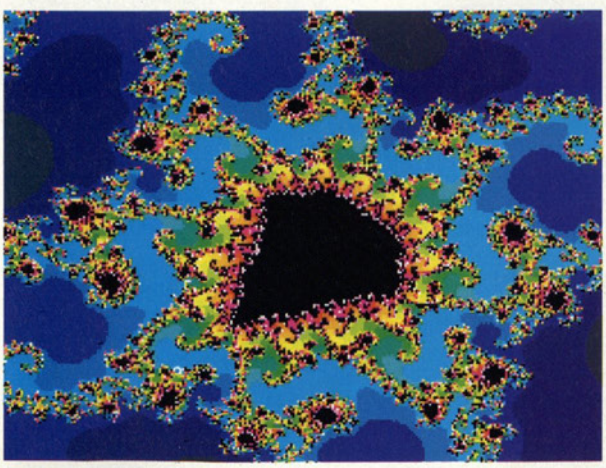


A new scientific wonder is explored by **TIM MOORE**

The increased sophistication of computers, and especially their graphic displays, during the 1980s has led to many interesting advancements - but none so revolutionary and diverse as the application of fractals. From humble beginings this recent branch of mathematics has had a profound impact not only on traditional science, but also on areas not normally affected by modern mathematical research such as social science, ecology and art.

To many people, the most tangible application of fractals is probably in the TV and film industry. Highly realistic images can be produced which closely mimic the forms found in nature; mountains, clouds, landscapes and plants can all be created inside the computer using a program, rather than being digitised or hand-drawn. The film industry has been quick to capitalise on this and companies such as Lucasfilm specialise in the production of such images, bringing us breathtaking scenes, such as the Genesis sequence in Star Trek.

"A butterfly flaps its wings in an Amazonian rainforest... that tiny butterfly's movements have caused a storm to pour down rain on Bristol."

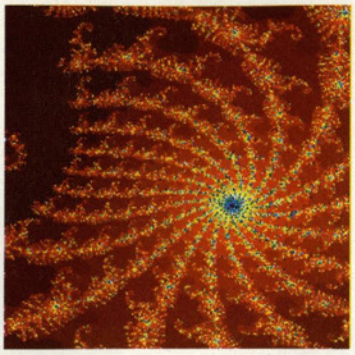


All the fractal images accompanying this article were created using Tim Moore's program which is on the Coverdisk. The background images are various crystal structures, courtesy of the Science Photo Library – as is the cover picture which is actually a micrograph of crystals of menthol.

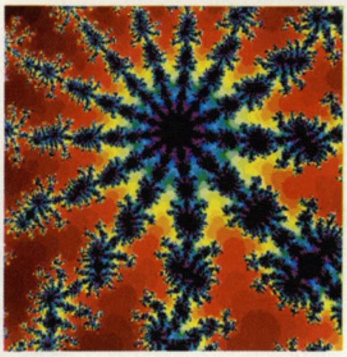
Chaos and Order

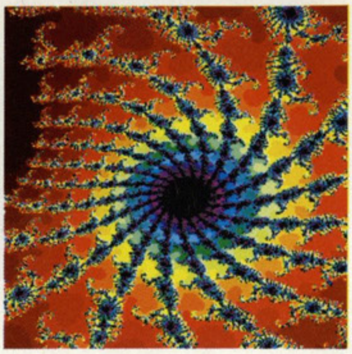
Science tries to break up the natural world into individual systems, which it expects to behave in ordered ways: some do, but others are chaotic. However, each system may suddenly flip from one state to the other. Consider a singer with a microphone connected to an amplifier and loudspeakers. As the volume is gently increased, the singer's voice gets louder. But when a certain volume is reached, a familiar screeching or howling is heard - commonly termed feedback. In this system we have gain (the amplifier) and a feedback path (the soundwaves from loudspeaker to microphone). As we increase the gain the system behaves in an ordered manner until a certain point when chaos sets in.

In the 1840s a biologist called P F Verhulst studied species population in nature. This too has gain: two rabbits (if one is male and the other female) generally produce more than two rabbits in the next generation. It also has feedback: the number of rabbits next year depends upon the num-









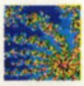
ber this year. Verhulst devised a formula to incorporate growth and maximum population size. His formula increases population by a growth factor, which in turn decreases the bigger the population becomes: so for small populations the numbers may double each year, but for large populations it may increase by one percent. Expressed algebraically, the rule is pop=pop+rate*pop*(1-pop) where pop=current population and rate=growth rate.

The following Basic program allows investigation of the population size.

```
pop=0.1
rate=1.5
for x=1 to 1000
pop=pop+pop*rate*(1-pop)
print pop
next
```

Try experimenting with different values of rate and you will find that below rate=2, the population settles down to a steady value of 1. This is obviously an ordered system and its result found favour with the mid-20th century scientists studying population as this confirmed the instinctive view that after a few ups and downs, numbers would reach an equilibrium.

"The assumption was that it's that butterfly's fault. Too many little factors can have a huge effect."





But what happens when the growth rate is greater than two? Well, experimentation will reveal that the steady state gives way to oscillations. For rates between 2 and 2.5, the population flips between two values: between 2.5 and 2.55 there are four values: from 2.55 to 2.565 there are eight, and so on until at 2.57 this doubling has occurred infinitely many times. Our simple equation is now yielding chaotic results and, strangely enough, with even higher values (for example around 2.83) order again returns with a cycle of three values.

The polarised thinking of scientists refused to consider such results or else they were deemed to be oscillations around an underlying value. Besides, without computers, the chaotic results were hard work to produce and were largely ignored.

It wasn't until the 1970s that views began to change. American James Yorke was disturbed by the way in which scientific thinking always looked for, and found, order. Any unpredictable results were either spurious exceptions to a regular rule or else they were the results of random noise or effects too tiny to be measured. Building on work by Edward Lorenz, his study of the Verhulst process led to the publication of his paper "Period three implies Chaos" in which he proved that if ever a system produces a three-cycle period (as in the rate=2.83 example above) then the system will produce cycles of all other lengths and so is unconditionally chaotic.

And so began modern research into Chaos, whose results enabled old problematic data to be viewed in a new light.

The Mandelbrot Plot

Born in Warsaw in 1924, Benoit Mandelbrot had little in the way of formal schooling. However his family's move to Paris to escape the Nazis enabled him to study at the elite Ecole Polytechnique and he later moved to the United States where he accepted a post at IBM's Thomas J. Watson Research Centre. His early work investigated the patterns in economic figures but soon afterwards he worked on a problem giving trouble to IBM's engineers: namely that of electrical noise in telephone cables.

Close examination of the pattern of noise revealed an odd pattern. If, for example, we assume that in each day 1% of that time has errors in it, then one hour of that day would also have 1% of errors. This relationship would apply no matter what time period was used. Furthermore, the average number of errors approached zero as more data was considered. Mandelbrot recognised this behavior as similar to a nineteenth-century curio known as the Cantor set after Georg Cantor.

Mandelbrot also examined the

BUTTERFLY COMPUTING INTRODUCING CHAOS THEORY

A butterfly flaps its wings in an Amazonian rainforest. The air stirred by its wings causes ripples throughout the atmosphere, making tiny but perceptible changes that spiral and increase until – just possibly – that tiny butterfly's movements cause a storm to move in from the Atlantic and pour down rain on Bristol.

This idea has become the focus in many people's minds of Chaos Theory, a new way of looking at science that has had an incredible impact on the popular imagination. Thanks in particular to a programme in BBC TV's 'Horizon' series (through which that Amazonian butterfly earned a brief notoriety) and a best-selling book by James Gleick titled simply 'Chaos', science has achieved a new cult status.

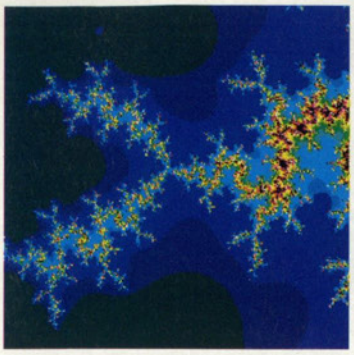
The reason for this is threefold. First, Chaos is a young science: many of its central theories were developed as recently as the early Eighties by off-beat, charismatic young scientsts willing to overturn the old order. Secondly, it is very much a product of the computer age. Only recently did number-crunching allow scientists to explore natural processes by making entirely artificial mathematical models. And thirdly, the advances in graphics displays have produced results that not only give information but also become an artform in themselves.

Lost you yet? Well, look back at that butterfly. The weather at any point in the world is notoriously difficult to predict, however much money is spent by the Met Office in trying. Why? Well, the assumption was that it's that butterfly's fault. Too many little factors can have a huge effect. But still, when computers came along, scientists figured it had to be worth trying them out on the problem: plenty of numbers to be played with.

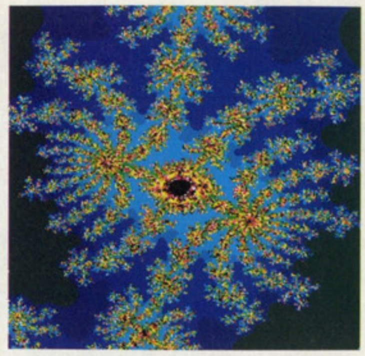
The idea was to make a simple model, ignoring all the little things, to see if any patterns would emerge. A computer was programmed with a simple model of the atmosphere, using only a few simple equations already well known from meteorology. It was run. Rather than showing the expected results, falling into patterns as regular as the rules from which it was formed, the computer world's weather suffered from violently unpredictable weather – just as bad as the real world!

This is where Chaos Theory was born. Normal science had always assumed that simple rules and equations, would give predictable results. But no. Never again would that be safe.

In its early days Chaos Theory was seen as subversive and misguided by many traditional scientists, but is now an accpeted part of many branches of scientific study. It finds pattern where there seems to be none - explaining, for instance, the Great Red Spot of Jupiter – and chaos where there should be order. It also finds beauty: the great icon of Chaos is the Mandelbrot set, a computer-coloured display of a simple mathematical equation that reveals hitherto undreamt-of infinities of complexity.



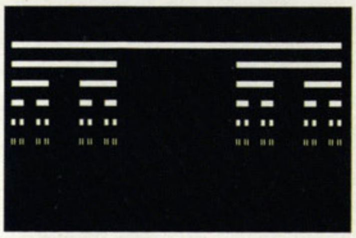






records of river flooding, particularly of the Nile, mainly because of the wealth of data. He discovered a similar pattern to the Cantor set could model the figures he saw.

Simple variations of the Cantor set also proved able to model many natural phenomena with an accuracy and simplicity that had previously eluded mathematicians. Mandelbrot thought about the mathematics



The Cantor Set – Start with a line, erase the middle third, and repeat this process on the remaining lines indefinitely. This yields a simple fractal shape which consists of infinitely many lines with a total length of zero!

If you imagine the lines to represent noise and the spaces to represent error-free periods, then this set provides a good model for the noise in telephone lines.

behind such models and wondered what other aspects of nature could be analysed in a similar way.

In 1967 in the magazine "Science", Mandelbrot asked the question "How long is the coastline of Britain" in an article of the same name. This is the kind of question which one might expect an atlas to answer; strangely enough there is no correct answer, or even a figure which is close.

Mandelbrot's argument went as follows. If you were to use photographs of the coastline from one mile high, and then attempt to measure the coastline, you might get a figure of 2,000 miles. If your photographs were taken from half a mile, then your measurements of the coastline would include some extra detail not visible on the one-mile photos: consequently your estimate of coastline length would increase to maybe 3,000 miles. Closer examination of the coastline would reveal more detail and therefore appear longer, until you're eventually looking at all the rock pools and grains of sand: the closer you look, the longer it gets.

If we ignore the problems of measurement at the subatomic level then the coastline of Britain is infinitely long - but Britain's area is finite. Such a shape has no place in the Euclidian geometry of points, lines, squares and cubes. It is not quite two-dimensional and not quite three-dimensional: in fact, shapes such as the Cantor set, our idealised coastline and the Mandelbrot set can be shown mathematically to have a fractional dimension. For example, the Cantor set has a dimension of 0.63, somewhere between a point (0-dimensional) and a line (one-dimensional). In 1975 Mandelbrot coined the term 'Fractal' to describe these objects with fractional dimensions.

In the late 1970's Mandelbrot decided to investigate a simplification of the Verhulst process. If we rearrange the basic formula we get:

r*p*p+(1+r)*p

where r=rate and p=population.

Mandelbrot decided to try:

p*p+c

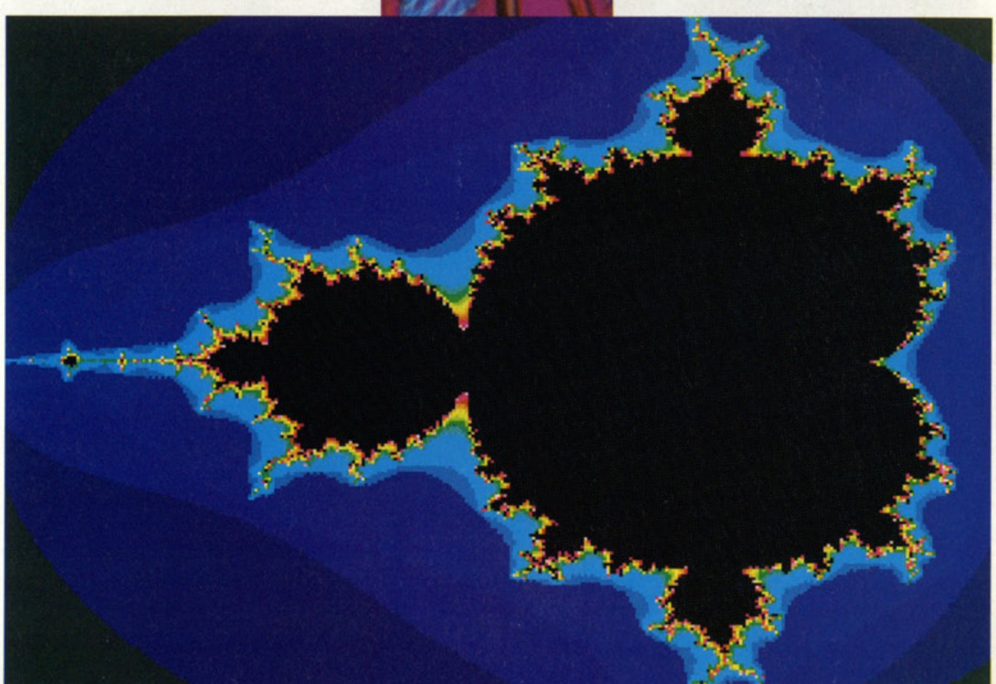
where c is a constant.

He also chose to apply the formula to complex numbers (see below) rather than real numbers. During World War I, French mathematicians Gaston Julia and Pierre Fatou investigated the behavior of formulae such as that above using complex numbers. They discovered that certain sets of numbers rather than rapidly growing (towards infinity) or shrinking (towards zero), would, in a similar way to the Verhulst process, be drawn towards a particular steady value or cycle of values: known today as 'attractors'. If these numbers are plotted on an Argand diagram (see below) then the boundary between numbers that move towards infinity, and those which move towards an attractor, are curiously deformed circles or spirals, different for each set.

Mandelbrot was attempting to group these sets, now known as Julia sets, into a form that would encompass all possibilities: this he achieved in 1979 with the set that now bears his name.

The Mandelbrot set

Mandelbrot's idea was to use an



This is the initial 'beetle' picture produced by the Mandelbrot set. It may not look like much but by zooming in on it, you get all the other astounding pictures on these pages.

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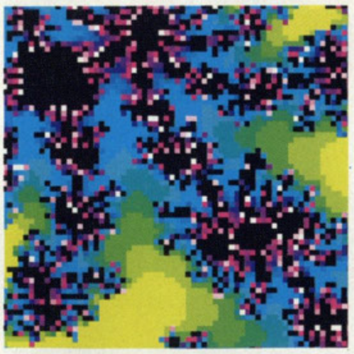
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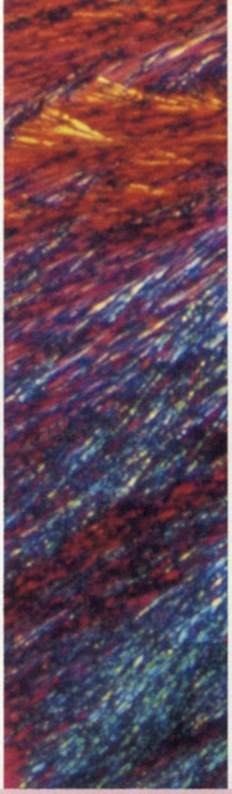
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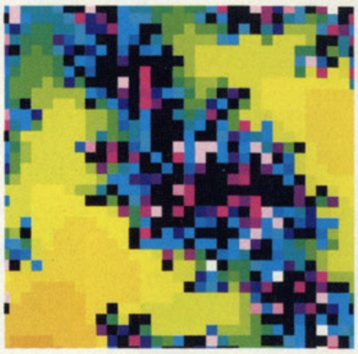
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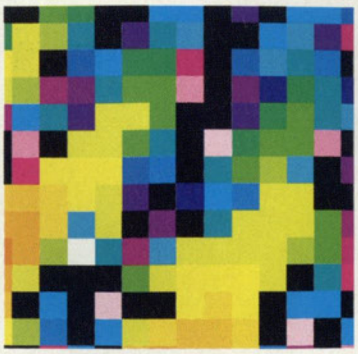
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Argand diagram: for each complex number to multiply it by itself (squaring), add the original number and repeat. The corresponding point on the Argand diagram is plotted either black if the number grows toward infinity or white if it does not. Mandelbrot was working at Harvard University at the time so did not have access to the superior computers of IBM but performed his work on a VAX supermini with an old Tektronix VDU.

His first efforts produced a crude version of the beetle-like double blob which his theory had predicted. He was surprised to see that around this shape were tiny blobs. Using the computer to zoom in, he saw that these blobs had yet more blobs around them. As Mandelbrot used higher and higher magnification the pictures became increasingly messy.

Attributing this to his computer system, he returned to IBM to use one of their mainframe computers and was surprised to see that the mess was in fact fine detail of an very intricate nature. These areas provide the best place for a Mandelbrot set program to look at and are further refined by the addition of colour.

Where points were previously coloured white, the program must measure how quickly a complex number reaches infinity and colour-code it accordingly. The following basic program shows how to generate the Mandelbrot set. It was written with AmigaBasic in mind but should run on most computers with little or no modification. The values for SCRY and SCRX should be the number of vertical and horizontal pixels on your screen but smaller ones are much quicker. The value for K is how many levels to calculate to, and this must be converted to the actual number of colours on screen before plotting. Since Amigabasic windows are 4-colour, the program divides the value calculated (I) by 8. The results are pretty poor but this is just to give an idea of the process involved and for those planning to write their own program.

```
DEFINT P,Q,I,K
CLS
SCRY=64:SCRX=80
K=31
XMIN=-2.25:XMAX=0.75
YMIN=-1.5:YMAX=1.5
H=(XMAX-XMIN)/SCRX:V=(YMAX-YMIN)/SCRY
FOR Q=0 TO SCRY-1:FOR P=0 TO SCRX-1
M=XMIN+P*H:N=YMIN+Q*V:I=0:X=0:Y=0
LABEL: W=X*X:Z=Y*Y:R=W+Z:Y=2*X*Y+N:X=W-Z+M:I=I+1
IF R<4 AND I<K THEN LABEL
I=INT(I/8)
PSET (P,Q),I:NEXT:NEXT
END
```

State of the art and beyond

Fractals and Chaos are currently pro-

USING THE PROGRAM

You needn't be able to understand fractals in order to generate amazing pictures - all you need is an Amiga and a bit of patience. Run the program by double-clicking on the 'fractals' icon or by typing "fractals" from the CLI. After clicking 'OK' on the requester, the fun begins.

Initially the program draws the Mandelbrot beetle using large pixels. After about 20 seconds the drawing is complete: note how the screen is redrawn in slightly different colours at the end. This allows the program to make best use of the Amiga's 32 colours. Holding down the right-hand mouse button brings up the menu bar and although most functions are obvious I'll outline them briefly.

PROJECT MENU

About;	Me!
Save screen;	Takes you to the save requester
Screen to back;	Instead of the screen gadget
Screen to front;	Ditto
Quit;	To workbench or CLI

LEVELS MENU

The levels are the maximum number of iterations per pixel, or 'dwell' as it is sometimes called. Basically if you imagine the fractal picture to be a map of a landscape where the colour of a pixel represents height, then the blues (default palette) are the lowest areas rising through the other colours to black which is the highest. With the initial setting of 32, dark blue is height 1 and black is 32. Any detail higher than 32 is also coloured black and therefore lost. The higher levels capture this detail but pictures can take much longer to draw - also detail at lower levels may be drowned out. Try experimenting until you get a feel for the effect.

PIXEL MENU

Small;	Finest resolution.
Med;	Use 2x2 pixel blobs.
Large;	Use 4x4 pixel blobs.

PICTURE MENU

Generate;	Get drawing!
Clear screen;	Just that.
Flip colours;	Switch between the 4 different palettes.
Stop drawing;	Use this when the program is generating.

Most menu items can also be selected when the program is running.

Zooming in on a drawn picture is easy: hold down the left button and drag a box around the area of interest. If you make a mistake draw another one. If you change your mind and don't want to magnify anything then just click the left button and the box will disappear. Occasionally you may wish to zoom out – maybe you zoomed too far are or are missing an area of detail. This is done by dragging the box around the full screen. On some displays you may be missing the bottom few lines, so keep dragging, even if the mouse vanishes, until you're sure.

When you have selected the zoom, levels and pixel size, select the Generate option. Because the program saves the values it generates, it's a good idea to use large pixels first and then if you like the picture move onto medium or small: no time is wasted doing so.

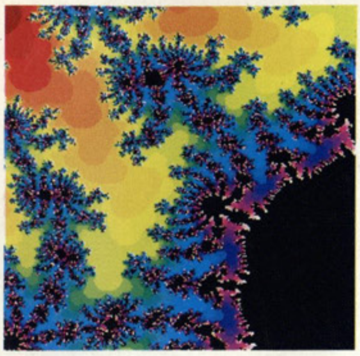
TIPS

The best patterns are to be found on the boundary of black and coloured areas – the gap between the beetle's head and body is a good place to look. When magnifying, particularly when using large pixels, leave a gap around the area of interest to avoid losing detail invisible at larger scales.

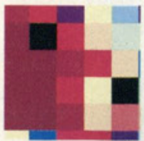
Despite being written in machine code, most screens take a while to draw, so only switch to small pixels for the final redraw.

If you generate a screen with black areas, try selecting the next level up and regenerating. Only black pixels need recalculating so you won't have to wait long and it may reveal extra detail: if not, move back down and carry on.

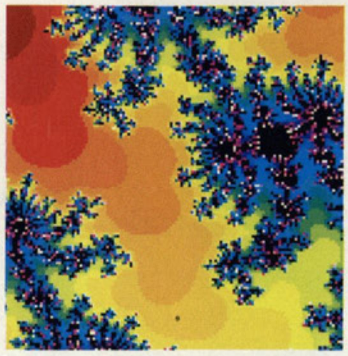
Buy a processor accelerator.











viding valuable insights into some of the complex systems which have proved baffling for many years. For example, much progress has been made in the field of epidemiology in explaining why some diseases have regular cycles and others appear to be random. In biology, the growth of neurons within cats' brains have been found to exhibit fractal branching patterns producing highly efficient structures. These same shapes are also responsible for the excellent thermal qualities of goose down. Looking to the future it is hoped that these new techniques will help us understand complex systems such as human immune response - and possibly the workings of the brain.

Surely the most important test of this new research is into the world's largest fluid dynamics experiment, namely the earth itself. Hardly a day goes by when we are not reminded of the catastrophic consequences associated with global warming. If we are to influence the climate constructively we need accurate models to help us plan many years ahead.

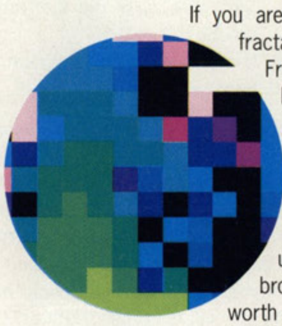


Whatever the specific benefits, it is clear that the wide application of Chaos research is reversing the trend of diversification within science and may spell an end to reductionism.

It seems fitting that the study of such simple processes have led to ideas which have had such a large and complicated impact upon man's understanding of his world.

Further reading

For a cheap, easy-to-read grounding in Chaos I recommend "Chaos" by James Gleick, published by Cardinal. If you are specifically interested in fractals then try "The Beauty of Fractals" by H O Peitgen and P H Richter, published by Springer-Verlag. Alternatively for those with deep pockets and some mathematical ability, "The Fractal Geometry of Nature" by Benoit B Mandelbrot (pub W H Freeman) is worth a look. ■

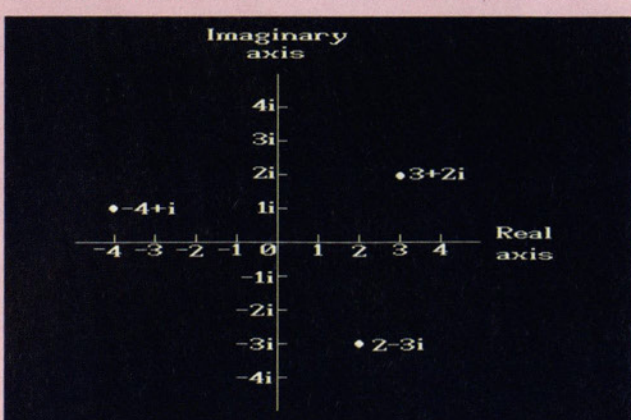


COMPLEX NUMBERS

In order to fully understand how the Mandelbrot set is generated it is necessary to be familiar with complex numbers. To a lot of people all numbers are complex, but to a mathematician a complex number is a particular entity.

A complex number is of the form a+bi where a and b are ordinary (real) numbers and i is the square root of –1. Since square roots of negative numbers are impossible using conventional arithmetic it is therefore referred to as an 'imaginary number'.

If you find this a little confusing, just remember that a complex number consists of two parts which you can call anything you like as long as you follow these rules when using them. When adding, simply add together the real parts separately and the imaginary parts separately.

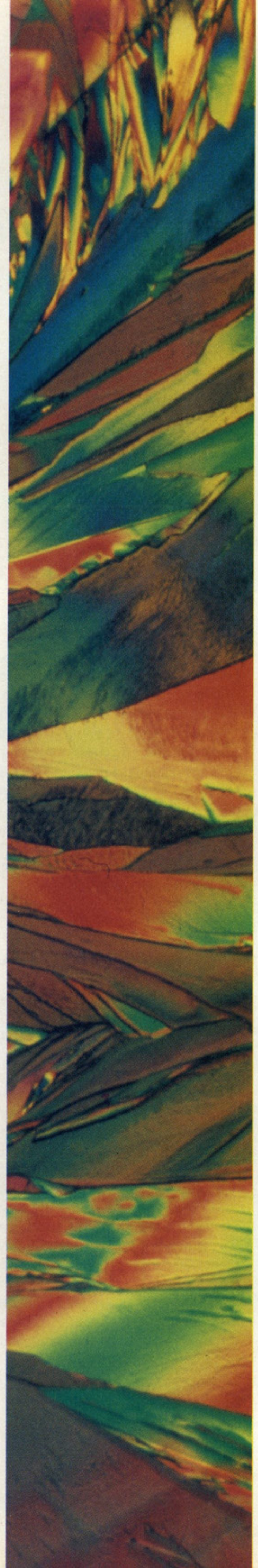


eg
(10+20i)+(30+40i)=(40+60i)

When multiplying, follow the usual process for multiplying out brackets but remember that i*i=-1.

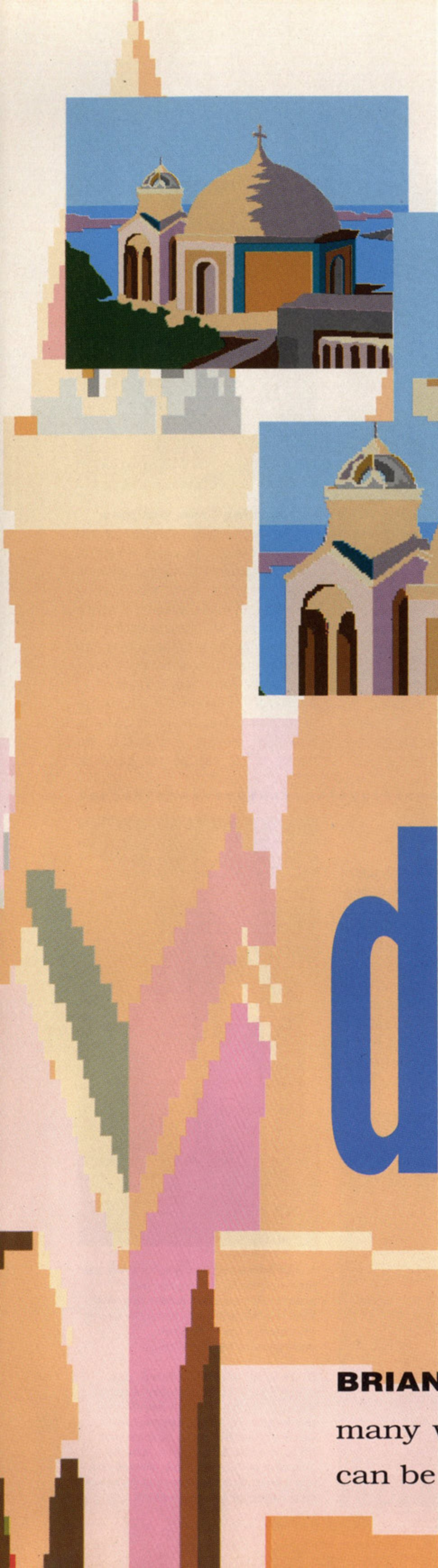
eg
(10+20i)x(30+40i)=10x30+10x40i +20ix30+20ix40i
=300+400i+600i-800
=-500+1000i

One more term used is the 'Argand diagram'. This is similar to a graph where the real numbers are plotted on the horizontal axis and the imaginary numbers are plotted on the vertical.




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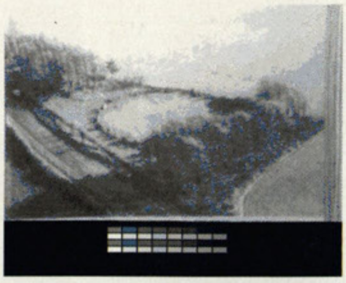
digital DEVICES

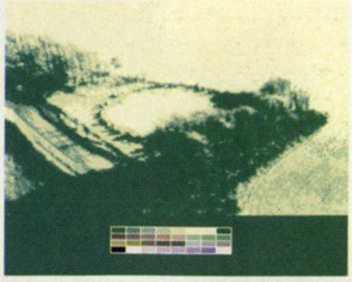
BRIAN LARKMAN enthuses on the many ways in which a digitised image can be used, confused and abused.

Only two of the many digitisers or frame-grabbers available for the Amiga could even loosely be called budget devices – Digi-View from NewTek and Vidi-Amiga from Rombo. In many ways they sum up the range of systems available, even those at much higher prices, so these two are the ones we'll use for the purposes of this tutorial.

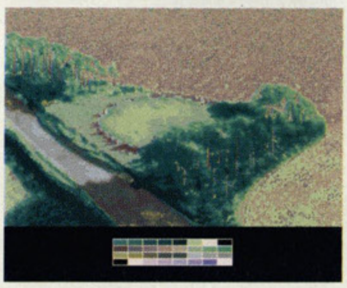
Digi-View can produce very high-quality images in any resolution, but only quite slowly – by capturing the red, green and blue information separately. This requires a static image from a video camera – and a video camera is a rather expensive item. Vidi-Amiga, on the other hand, will grab an image or a series of images in 'real time' from any video source, even if the picture is moving, but only in 16 shades of monochrome. Colour images can be obtained from Vidi-Amiga, but this calls for the additional Vidi-Chrome colour software and then, like Digi-View, only a static image can be grabbed.

The two different types of images obtained from these two types of digitiser – static full-colour pictures and monochrome sequential 'frame-grabs' – present very different opportunities for original illustrations and animations, but similar problems to be overcome depending on how the pictures are going to be used.



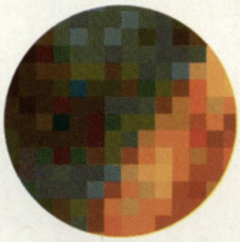


ROLLRIGHT
The original and rather poor digitised black-and-white photo, NEAR RIGHT, was coloured with an appropriate palette in *Deluxe Paint*, FAR RIGHT.





The ploughed field in the background was added from a brush, NEAR RIGHT, and finally the GAIA animation adapted from the Muybridge Dancers (see Page 26) was added as an anim-brush, FAR RIGHT.



Let's have a look at the various ways that digitised pictures might be useful to a computer artist. The majority of these are static, so in each case either Digi-View or Vidi-Amiga with the colour software could have been used – though other software such as *PixMate* is required to convert the HAM Vidi images to 32, 16, or 8 colours, or to other resolutions. Digi-View is rather good at doing this itself. The special case of sequential grabbing, which only Vidi can achieve, we will try to discussed next issue.

Working From Outlines

The software now available for the Amiga provides the widest range of tools for producing original artwork, but there is no doubt that working from a 'ready-made' image can save a lot of time. If you really want the picture to look hand-crafted, it is still useful to start from an outline drawing so that the form and proportions of the subject are correct. If a particular gesture or expression is important to a portrait, or the accuracy of the curves of a car or aeroplane or

POSTERISING

One popular, conventional illustrative style retains the shape of its images, but flattens and simplifies the areas of colour, suggesting form with contrasting areas of light and shade. This can be easily achieved from a digitised image by drawing around the main areas of each tone in a distinct colour – perhaps red – then filling each enclosure with flat colour. The real art comes with deciding what line to take between these light and dark areas and what colours to use – for it is the subtle use of colour that makes the technique work. *Santorini*, BELOW, was drawn to illustrate the technique. The original HAM picture was rather weak and soft but the final illustration captures the hard-edged light of Greece quite well.



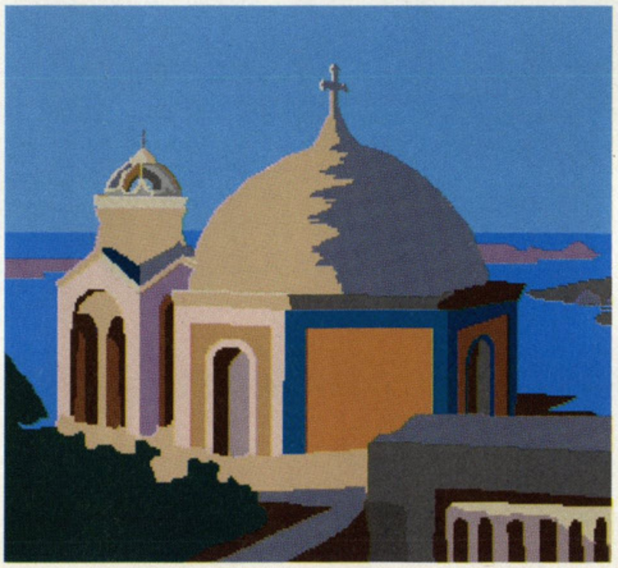
The original HAM picture, ABOVE, is rather poor, but enough detail is available to reduce the tonal areas to flat colour with the aid of the original postcard. The process used (in *DeluxePaint III*) was:

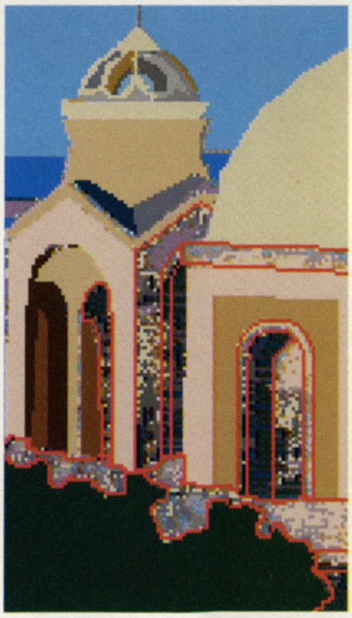
1. Convert the HAM picture to 32 colours using Digi-View (NoDither).

2. Create a suitable palette working from the postcard. The picture will now be almost unrecognisable but can be recovered sufficiently with a remap to the new palette.

3. Using any of the line tools that are suitable, draw round the main tonal areas – find the main large areas where there is a junction between one hue and another, or major changes of tone. Use a strongly contrasting colour for these lines: eg bright red (as shown TOP RIGHT).

4. Select this line colour (did you use red?) as the background colour. This will now act as a border for the fills.





5. Fill into each tonal area with the closest shade from your new palette. If you hold down the 'Alt' key, the fill will conveniently cover all colours up to the red background border line.

6. Once all areas are filled, use Stencil to lock all colours except the red. Using a small brush and the keyboard 'Pick' key, select each colour from the screen and fill in the red boundaries one by one. For a line-drawing effect, the red could all be converted to black or a range of greys instead.

landscape, then working from a digitised original is almost essential. In traditional animation this tracing technique is known as Rotoscoping. It was used by Disney for several of his cartoon characters – most notably for Snow White.

Using Limited Palettes

If you want to retain the colours in a 4, 8 or 16 colour brush, but still use it with a background picture that has a different palette, there are several strategies that can be used. The simplest thing to do is to remap the brush to similar colours in the picture palette. If the available colours are not close enough and there are some spare shades on the palette these can be modified to suit – though with 16 to change this can be laborious. A quicker method would help.

Now, the palette 'in use' is always saved with the brush. This can be used with the new picture by selecting 'Use Brush Palette' on the 'Change Colour' menu. If the brush were cut from a 32-colour screen the whole palette would be used with the new picture; which in this case is not what you want. If fewer colours than this are in use – perhaps 16, 8, or 4 – only the left-hand rows of the new 'picture' palette are changed by a 'Use Brush Palette' command. If you are careful to restrict the number of colours used in the brush palette with the Screen Format requestor and leave the left-hand columns of the picture palette free, the task of transferring colours from picture to picture is made much more straightforward. This technique was used with the ROLLRIGHT pictures above left. In each case the palette is included to illustrate the changes.

Colourising

Working in a 4000+ colour HAM program it is easy to change the Hue of any area of the picture without altering its Value. (see the manual for your paint program or *Amiga Format* 10 for a full explanation of these terms.) This process is called 'colourising' and most HAM paint systems have a 'Colourise' (or usually 'colorise') mode described in detail in their manual. The act of colourising 16-grey-scale monochrome pictures in a 32-colour paint program can be much more difficult than in a HAM package.

To produce the ROLLRIGHTGAIA animation an aerial view of this beautiful prehistoric stone circle was required. The only one available was a rather bad black-and-white print, so this was used for the initial digitising. At the time, only an NTSC version of Digi-View was available (I mention this just to establish my pioneering credentials on the Amiga!)

Originally the picture was going to be used as a background in a *Deluxe Video* production. Restricting the palette to 8 shades of green gave the starting point for a long-running series of colourising exercises. Eventually it was found that getting a realistic picture with 8 colours was impossible. *Deluxe Video* (the original 8-colour background 'dual-playfield' version) was abandoned so that the full 32 colours of *Deluxe Paint* could be used (though the right-hand column of 8 was retained for special effects.) A palette of 24 shades of green, grey and brown was constructed, using two ranges of green – one for grass and one for trees.

Colourising was achieved with the use of *Deluxe Paint*'s 'Stencil' mode. (*Deluxe Paint III* has a 'Tint' mode but this depends on which shades of the tint colour you have present and gives less control than the method described here.) Each of the original 8 colours was selected in turn and the rest of the palette was locked.



LIMITED PALETTES

Working from a full-colour picture in HAM mode is fine, but in some circumstances you may be much more limited. With *Deluxe Paint*, only a maximum of 32 (or with *DPIII*, 64) colours can be used. If you want to include a cut or a brush from a different source and paste it into a picture with a full and established palette, the cut may have to be limited to even fewer colours, perhaps 8 or even 4. The various versions of ARROWFROG show how the image quality gradually deteriorates as the number of colours used is reduced. HAM, 64-colour EHB mode and 32 colour mode are actually quite similar, but below that point quality definitely drops off. This may not be a problem, especially if the brush is quite small, but some sort of compromise is often neccessary.



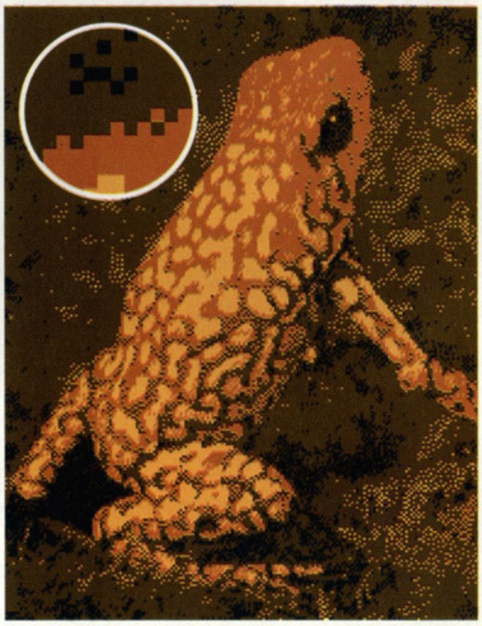
ABOVE: Arrowfrog with 32 colours...



ABOVE: Arrowfrog with 16 colours...



BELOW: Arrowfrog with 8 colours...



BELOW: Arrowfrog with only 4 colours...

Using a small brush, the new colour was painted on in suitable places, making sure that the tonal gradient was maintained. (In other words, light grass green replaced light original green, etc...) In a few places the image was cleaned up and clarified – the tree-trunks and the stones and their shadows, for instance, needed special attention.

The blank-looking field at the top of the original digitised picture was completely reconstructed. On the spare screen the three browns and a few other colours were used to create parallel vertical 'plough furrows'. These were picked up as a large brush and rotated to the correct perspective for the picture. The final pasting could have been done with stencil set for all colours except the blank field, but in the event Perspective Fill into that area looked more effective than the actual brush.

To get the 'energy lines' effect, Cyclic Symmetry, Colour Cycling and many hours of experimenting were used. This time the two palest grass greens were left unlocked and the energy lines brush was pasted into them. This made the lines pass behind stones and trees.

The original picture was an NTSC 200-line image without overscan. To get the larger PAL overscanned version, numerous *Deluxe Paint* tools were employed. Regular and irregular brushes from the main picture were picked up and pasted down in the blank areas. To remove the join lines and repeats, 'Blend', 'Smear' and 'Smoothing' modes were used. Because of these sophisticated tools, the whole enlargement to PAL size took only about 20 minutes.

Animation Sequence

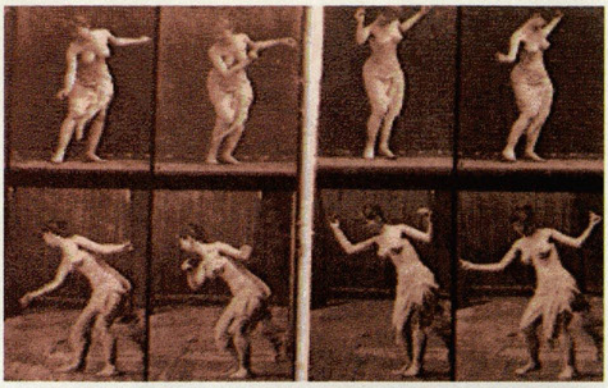
The figure of GAIA (the Earth Spirit) in ROLLRIGHT is actually dancing as part of an animated sequence. The animbrush with which she was drawn was traced from a digitised stop-frame picture of a woman dancing created by Eadweard Muybridge, widely recognised as the inventor of 'moving pictures'.

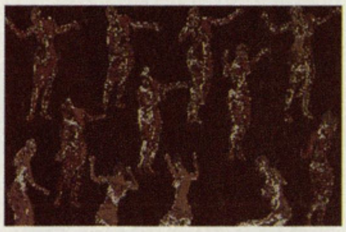
Working from 'ready-made' animation frames like this is the easiest way to make an animated object or animbrush of the sort used by *Deluxe Paint III* if you are limited to a static digitiser. The Muybridge "Motion" pictures are the best source of separate animation frames to digitise, though they are not always of complete sequences. Provided that you are only using the resulting animation for your own use and not publishing it there should be no copyright problems. Otherwise, unless you have access to a stock of animation 'cels' or a motor-drive on your still camera, the choice will be quite limited.

If you want to make the most of the Delta Compression used with *Deluxe Paint III*, the frames must be reduced to just their moving parts. (The digitised background will change from frame to frame and these changes will add a large amount of 'dead weight' to the delta compression, making very large anim files.) Before the frames are grabbed – either as a series displayed on one screen or a sequence of separate full screen images such as those provided by Vidi – the moving object must be surrounded by a plain background. *Deluxe Paint* makes this a fairly simple job but you must be aware of several factors.

First, the edges of the objects will inevitably retain some pixels of the background they were surrounded by. These have two effects – they may add to the number of colours used by the animbrush, and they show up when the object moves over a contrasting background. Such spots can be removed using Stencil mode and a brush set to one of the main animbrush colours.

Second, when the individual frames are pasted down one above the other prior to being 'picked up' as an animbrush, you must determine a suitable 'registration' point – perhaps the point about which the object is moving, or its centre of gravity. For the dancer her eyes were chosen, though in fact her feet would have been a better choice. Vidi frames, of course, are already registered. ■



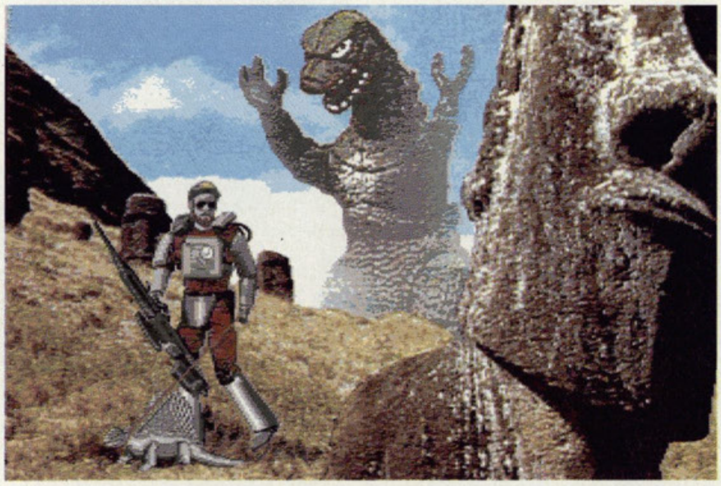


DANCING ANIMBRUSH
The individual frames are laid out on one page as a 'PicSheet'. The background must be reduced to a single colour and the frames turned into an AnimBrush as follows:
1. Magnify the image until one figure or object fills the screen.
2. Select a contrasting colour (red?)
3. With a single pixel brush, draw round each figure leaving no gaps. Don't forget the 'holes'.
4. Select the line colour as both background and foreground colour.
5. Fill into the background while holding down the Alt key. This will fill over all colours to the edge of each figure defined by the (red?) line. SAVE!
6. Set up as many animation frames as there are objects on the PicSheet.
7. Load the PicSheet into Scratch.
8. Pick up the first frame as a brush, move it to the first frame of the anim and paste the brush in.
9. Pick up the second frame, move back to the animation frame 1 and position the brush without pasting. Be careful to register the second frame with the first. Press keyboard number (2) to give you the next frame and paste down the brush. Return to Scratch, pick up the next frame and repeat until all frames are aligned.
10. Pick up all frames using Pick Up on the Animation menu. SAVE.

PHOTOMONTAGE

Ideally the best Amiga mode and software to use for photo-montage is HAM; this allows cuts from various sources to be mixed together without needing to worry about different palettes. Using HAM also means that 'edge transparency' can be used so that cuts can be integrated into the total montage without the joins showing.

The best edge transparency is provided by *Digi-Paint 3*, but this program is limited by having no way to rotate a cut by less than 90 degrees. Slight adjustment to the orientation is often required to get cuts to 'fit' into the background and this is the one thing that *Digi-Paint* cannot do – a great pity. Although they are much less fun to use than *Digi-Paint*, *Photon Paint 2* and *Deluxe PhotoLab* provide a (slightly less effective) form of edge transparency, plus all of the other tools that you might require – as you can well see from this example, produced using *PhotoLab*.



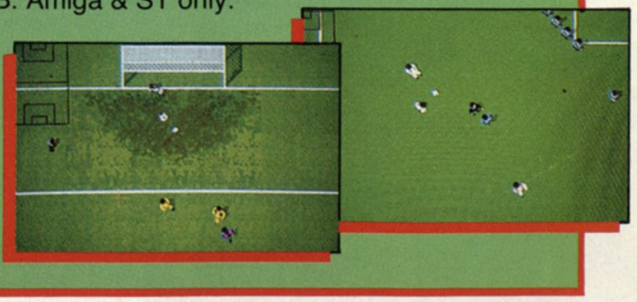
Traditional Photo-Montage – a collection of photographic images cut out and pasted together to form a new picture – has been popular since the early days of photography. The combination of a computer and digitiser is perfect to develop this technique further, as it simplifies manipulation of the cut images and extends the range of tools available to the artist.

For example, a cut can be scaled larger or smaller – proportionally, horizontally or vertically – rotated, mirrored, distorted, bent, put into perspective on any plane, wrapped around another object, made transparent, made colourful if it is monochrome, given a new surface texture, a new colour, even a complete new identity. Many of these tools were used by Gene Brawn for THE HUNTERS, above, one of a number of photo-montage examples included with Electronic Arts' *Deluxe PhotoLab* package.



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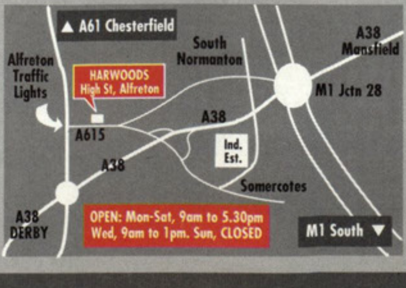


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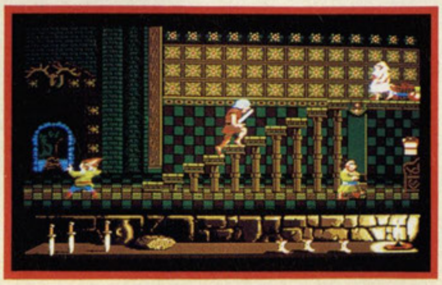


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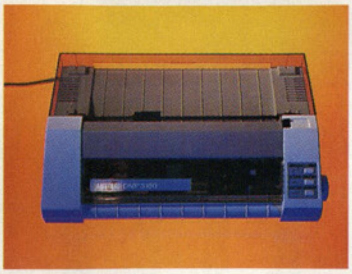
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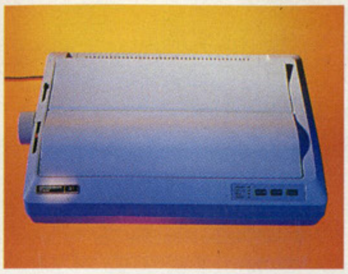
What's the point of having the best micro in the business if you can't preserve its output? Budget 9-pin printers can now do wondrous things with bits of paper, as SIMON WILLIAMS discovers...

After buying an Amiga and spending happy hours with great games and graphics gizmos, most people start to think about getting their stuff onto paper. If the budget is tight, the obvious first choice is the 9 pin dot-matrix printer; these days a machine capable of decent NLQ text and graphics dumps. Entry-level printers have come a long way in the last few years and the best of them offer convenience, coupled with a reasonable speed and quality output. Five of the leading contenders are reviewed here; machines from the front line printer companies. All will do the job, but some better than others. They're listed in ascending order of price, so you can see what you get for the extra readies, but remember the prices quoted are recommended retail prices. You can usually knock up to 40 per cent off these prices if you're prepared to shop around.



LEFT Amstrad DMP 3160

RIGHT Mannesmann Tally MT81





DMP 3160 £171, Amstrad 0279 454555

The Amstrad design philosophy is 'stack 'em high and sell 'em cheap'. It gives a lot for a little, but if it can do this at a low cost to itself, it will be happier still. This cost analysis has produced a dot-matrix printer with some radical design rethinks. The DMP 3160 passes the paper straight through from front to back, across its top surface, using tractors embedded in its deck. This saves the cost of a platen and all the moving parts associated with it. The flat-bed technique enables the printer to print on card as well as paper, at thicknesses which wouldn't wrap around the cylindrical platens of other machines. Although cost effective, the technique does make it difficult to neatly mount the head and its ribbon, which has to print vertically downwards onto the paper. The printer copes by having a very lightweight head mechanism and a two-part cartridge ribbon which fixes to either side of the carriage. The ribbon is very short and is likely to need more frequent replacement.

The Amstrad machine can be raised on two thick wire legs, so paper can be stacked beneath it. The control panel is mounted on the right-hand carriage support pillar and includes line feed, form feed and on-line switches, with corresponding indicators. A smoked perspex cover shrouds the rear part of the top deck and the parallel port and dip switches project from the back panel. The DMP 3160 manual is one of the company's usual workmanlike books. Illustrations are a series of rather grey photographs and details of the control codes are a bit scanty, but otherwise it scores well.

The Amstrad is pretty basic in its functions and tractor-feed paper is simple to set up. Continuous paper is harder, though, as there's little guidance for the edges of the sheets. The ribbon is mounted at either end of the carriage and is awkward to fix and remove. The Amstrad is the most adventurous in its quoted speeds and also the slowest under test – not a good recommendation. It ranks bottom on print quality, as it has a very uneven NLQ font. The ascenders on its 't's are only one dot above the tops of 'e's and 'a's and the tops of its 'h's and 'i's are dropped lower than other letters. Output seems to hark back to the days of 8 pin printers.

The DMP 3160 claims compatibility with the Epson and IBM standards. It scores pretty well in this department, though it can only print some of the Epson special graphics characters. In graphics mode it emulates the Epson and IBM Proprinter graphics standards, which are pretty similar to each other, anyway. Print quality is adequate, but there is some banding on graphics dumps.

The Amstrad DMP 3160 is really only a revamp of the first computer printer the company ever produced. There is little to recommend it, unless you're bent on having a machine that can print on card. It's the slowest printer by quite a margin, but also the most boastful. Controls are basic and the ribbon has to be changed more frequently because of its short length. It's inexpensive, but not that much less than the others.

MT81 £183, Mannesmann Tally 0734 788711

Mannesmann Tally is a company not known as well in the UK as in Europe. It builds solid reliable machinery, much used in commercial installations. The MT81 is one of the most modest printers in the company's range and has a suitably modest price hung on it.

The printer looks particularly neat as it comes with top covers which hide almost all the workings of the machine. This also helps to reduce the noise level, which is aided by the machine's 'mute' mode. The push feed tractor wastes less paper than the pull feeds on the Citizen and Epson and single sheets are handled well with auto-loading and auto-parking of continuous paper behind the platen. The platen knob is mounted annoyingly on the left-hand side, though this will presumably be an advantage to left-handers. Front panel controls consist of buttons for on-line, line feed and form feed, and a separate selector for NLQ print. The parallel interface socket is at the rear, but the dip switches are positioned awkwardly under the print carriage.

The Mannesmann Tally manual is not at all good. It's written in five languages, which shows again its manufacturer's intentions for 1992, but all versions run concurrently throughout the paperback book – most manuals are spiral-bound for convenience. When you take out the sections repeated in the other four languages, there's not much manual left. The layout of the book makes it very difficult to find anything, a problem which is exacerbated by the lack of an index. Even with a budget printer, the purchaser is entitled to a manual solely in his/her own language and with a decent index to trace subject headings quickly. Mannesmann Tally should revamp this documentation as soon as possible.

The Mannesmann Tally, Star and Citizen are very much on a par when it comes to print speed, against very similar quoted specifications. Print quality is very subjective, and there was little to choose between the draft faces, though the MT81 spread its dots best to make the text look solid. The serif NLQ faces were again very clean on this machine. The Mannesmann Tally manual gives no indication which characters the printer can produce. Switching from Epson to IBM character sets has to be done with a dip switch on the MT81 – all the others in this test can switch via software as well. Graphics printing was good, with less banding than on some of the other machines. With the covers in place it was one of the quietest printers tested.

With a big following in Europe, Mannesmann Tally has a solid reputation, well exemplified by the MT81. It's machine with much to be said for it; a smooth design, a push-feed tractor, auto parking and a decent throughput speed. However, it's annoying to have a left-handed platen knob, the dip switches are awkwardly sited – especially as you need to use them to switch emulations – and it has a big problem with its manual.

This is a sample printout from the Amstrad 3160

THIS STANDARD NLQ TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

THIS EMBOLDENED TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

<u>THIS UNDERLINED TEXT</u>

<u>The Quick Brown Fox Jumps Over The Lazy Dog</u> 0123456789

THIS ITALIC TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

This is a sample printout from the Mannesman Tally

THIS STANDARD NLQ TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

THIS EMBOLDENED TEXT

The Quick Brown Fox Jump# Over The Lazy Dog 0123456789

<u>THIS UNDERLINED TEXT</u>

<u>The Quick Brown Fox Jumps Over The Lazy Dog</u> 0123456789

THIS ITALIC TEXT

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LX-400
£199, Epson
0442 61144

The Epson machine is solid and heavy and built to last. It's neat, square design works well with the supplied single sheet guide, but looks rather ungainly with the detachable pull-feed tractor. This hooks into the printer's top surface, after a rectangular plastic cover has been removed. The cover protects the gear mechanism to which the tractor meshes. The pull-feed tractor makes paper-parking impossible and you have to remove the mechanism to refit the single sheet guide. The control panel, on the right of the carriage, is made up of three membrane switches which perform line feed, form feed and on-line functions. They also have secondary roles, though, controlling SelecType.

SelecType is Epson's proprietary system for setting type styles like emphasized and condensed print. You do this by pressing various combinations of control buttons once SelecType has itself been selected. It's useful, but you need to have the manual handy as a memory aid. The parallel port is at the back of the printer, along with the dip switches. A second, serial, interface can be fitted above the parallel socket.

The Epson booklet is attractively laid out, with plenty of line-drawn illustrations, but has no details of the control codes at all. While you can rely on the printer drivers of many of the common Amiga applications to send out the right codes, it's also very useful to be able to send codes explicitly to produce given effects. The required information is available in a secondary manual, but surely you're entitled to details of control codes when you buy a printer?

The LX-400 loses 'ease of use' points for having a pull-feed tractor. If you're printing individual letters on continuous stationery, using a machine with a pull-feed tractor wastes a sheet for every letter printed. Pull-feed mechanisms are also more fiddly to load. The Epson is noticeably faster than any of the other printers and closer to its published speed figures than most. Its NLQ characters are quite notchy, though, particularly around 'o's and 'Q's, and are an acquired taste. Two fonts are provided, a serif and a sans serif face, with the sans face being an NLQ version of the draft font. Since most printers use a sans serif face for printing draft text, its surprising they don't all provide a version in NLQ.

Being Epson, The LX-400 emulates Epson control codes pretty thoroughly. The Epson compatibility extends to the full graphics character set, assigned to the ASCII codes lying between 128 and 159. They include a musical note, a telephone, card suit symbols and arrows. IBM compatibility is easier and partly equivalent to the Epson standard in itself. There are special characters here, too, available on the ASCII codes 0 to 31. The Epson makes no attempt to print these. Graphic bitmap printing is good, though, with the substantial head mechanism giving a smooth dump with less banding than most.

The Epson printer follows in a long tradition of solid printing workhorses. While not outstandingly well designed, it is the fastest of the five printers surveyed and does offer two NLQ fonts. The pull-feed tractor is a slight de-merit and the lack of control codes in the manual is another. It has the advantage of the Epson name and little problem with Epson compatibility. IBM emulation is not complete, though, with some characters below 32 ASCII missing.



LEFT: Epson LX-400

RIGHT: Citizen 120-D





120-D
£229, Citizen
0895 72621

The Citizen 120-D is the most lightweight of the printers tested here, but benefits from the smallest footprint as well. It has a detachable pull-feed tractor mounted behind the platen. The front panel sports three spongey buttons controlling on-line, line feed and form feed. The last of these doubles as an auto-load, aligning single sheets at the top of form.

The basic price of the Citizen includes no interface at all. A separate interface cartridge is inserted into the side of the machine and included in most dealers' quoted prices at time of purchase – the price quoted here includes either of the two interfaces. The interface slides in just in front of the platen knob and also houses the dip switches. Side entry of the printer lead has its pros and cons, but its annoying having to remove the cartridge to alter the dip switch settings.

The Citizen manual is excellent, though an odd shape, with lucid sections on use and reference. It includes details of the standard Epson and IBM control codes and a thorough index. There are plenty of examples and illustrations in this manual and example BASIC code with the output that results. Like the LX-400, the Citizen uses a pull-feed tractor. There are few machines with this type of feed left, and the sooner it dies a death, the longer the timber forests of Sweden are likely to survive. The 120-D has fairly basic controls on its front panel switches and doesn't allow any alteration of typeface or style from the front panel.

Print speed is similar to that of the the Star and Mannesmann Tally, and all three have similar specifications. The 120-D's draft text is particularly spidery and in general the machine is very light on the paper, probably a reflection of the weight of its head. The 120-D can reproduce the Epson extended graphics characters, but only some of the IBM set, such as the card suits. It doesn't support quad density graphic print, but on a 9-pin this density tends to be fairly theoretical anyway. Unless you have very robust paper, the density of pin impact will make a mess of the paper fibres.

Citizen has a long-standing success with the 120-D, partly due to its low discount price. This has made it the first choice of many on a tight budget and those people are getting a printer with no major problems. It has a good manual, is reasonably fast and has a few niceties, like its auto-feed of single-sheet paper. It is a rather lightweight machine, though, with spindly type and it has the peculiar add-on interface system using plug in cartridges at the side.

A new version of the printer, the 120-D Plus is due out by the time you read this. Although it wasn't available

This is a sample printout from the Epson LX400

THIS STANDARD NLQ TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

THIS EMBOLDENED TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

THIS UNDERLINED TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

THIS ITALIC TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

This is a sample printout from the Citizen 120D

THIS STANDARD NLQ TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

THIS EMBOLDENED TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

THIS UNDERLINED TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

THIS ITALIC TEXT

The Quick Brown Fox Jumps Over The Lazy Dog 0123456789

for review, it promises to have complete IBM emulation, quad density graphics print and other goodies not present on the 120-D. The RRP will be the same as the current model.

LC-10 £229, Star 01 840 1800

The LC-10 is the most recently designed printer of the group and Star seems to have learnt most of the lessons about making printers. It comes as standard with a parallel interface only, and this is positioned, like the Citizen's, at the front of the right-hand side panel. An in-line convertor is available if you need a serial link. The main switch, rather than being hidden round the back, is on the front panel, where it should be.

The Star has a domed top, partly made up of a curved, smoked plastic cover. The single sheet guides attach at the back of the top panel and there is also a push-feed tractor fitted under a cover at the rear. You can run single sheets while continuous paper is kept out of the way on the tractors – the Star automatically parks tractor-feed paper. The printer has a cartridge ribbon which is easy to fit on a carrier around the print head, but its dip switches are more fiddly, positioned below the carriage mechanism on the main circuit board.

The LC-10's control panel is extensive and gives you full control of the the NLQ print styles as well as the print pitch. Paper parking is also controlled from here, as is a facility to lock settings from the panel, preventing software from overriding them. The Star manual has good sections on use and reference, includes details of the standard Epson and IBM control codes and comes with a thorough index. The spiral bound book is well illustrated and is supplemented by a full colour quick-reference card.

RIGHT: Star LC-10





The LC-10 is the easiest printer of the five to use. It has the most sophisticated paper handling with automatic parking of continuous paper and auto-feed of single sheets. A lot of its functions are directly addressable from the front panel and may even be locked into the machine.

```
This is a sample printout from the Star LC-10
THIS STANDARD NLQ TEXT
The Quick Brown Fox Jumps Over The Lazy Dog     0123456789
THIS EMBOLDENED TEXT
The Quick Brown Fox Jumps Over The Lazy Dog     0123456789
THIS UNDERLINED TEXT
The Quick Brown Fox Jumps Over The Lazy Dog     0123456789
THIS ITALIC TEXT
The Quick Brown Fox Jumps Over The Lazy Dog     0123456789
```

The print ribbon is easy to fit and the cable is directly accessible at the side of the unit.

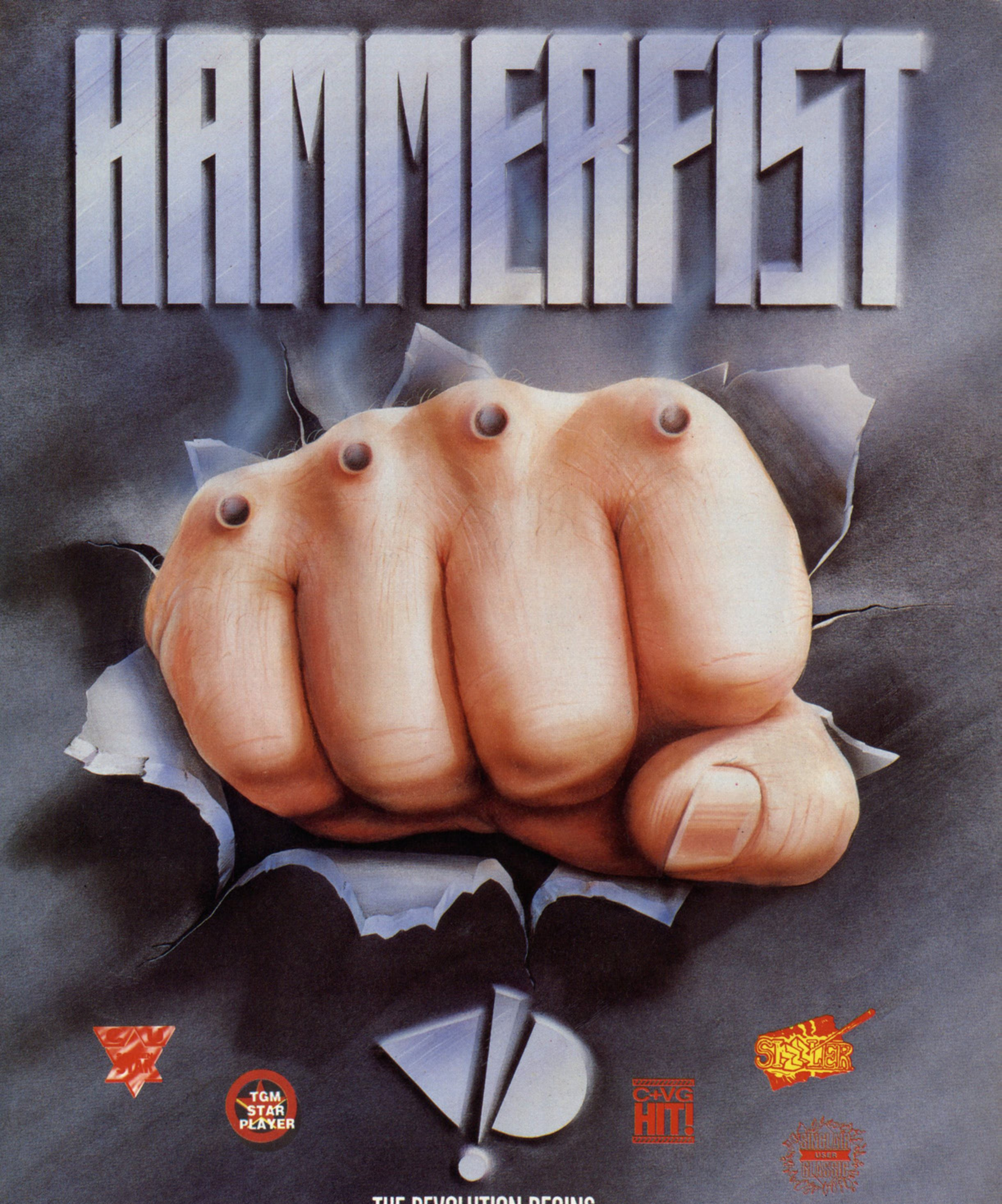
Speedwise, the Star was well up to par, and no more untruthful about it's performance than any of the others. Its print quality was judged to be second after the MT-81, but the Star has more fonts than any of the others. The Star claims four NLQ fonts, though this is a bit of wishful thinking, as two of them are Orator with lower case and Orator with small capitals! The other two fonts use traditional serif and sans serif faces. All look good, and all are available in italic versions, too. Orator is probably best reserved for headings as it can be tiring on the eye in large blocks.

If emulation is important to you, the Star could be the best choice. It provides all the graphic characters in the Epson and IBM sets and can obey all the necessary control codes. It's bitmap printing, too is one of the best, with a good even density and decent alignment from one pass of the head to the next. The Star LC-10 is probably the most popular of the entry-level 9 pin printers and it's easy to see why. Examination and tests of the machine show it to be the best designed of the leading models. It has sophisticated paper-handling with auto-parking and single-sheet auto-feed. Three different NLQ fonts are included, with a further variant for good measure. Speed and printout quality are well up with the rest and the documentation is good, incorporating a quick reference card. ■

		AMSTRAD DMP 3160	CITIZEN 120D	EPSON LX-400	MANNESMANN TALLY MT81	STAR LC-10
Interface	**parallel** **serial**	yes no	option option	yes option	option option	yes no
Buffer size		n/a	80 char	3K	n/a	4K
Paper entry	**fanfold** **s.sheet**	front front	rear top	rear top	rear top	rear top
Ribbon type		two-part cartridge	full width cartridge	full width cartridge	full width cartridge	head mounted cartridge
Dip switches		rear	removable interface cartridge	rear	under ribbon cassette	under ribbon carriage
NLQ fonts	**number**	1	1	2	1	3/4
***Special effects**		mini typeface	d.height quad size	–	–	d.heightquad size
Quoted speed	**draft** **NLQ**	160 40	120 24	150 25	130 24	120 30
Test speed cpi	**draft** **NLQ**	54 14	67 17	75 20	63 18	61 16
Epson graphics		no	yes	yes	no	no
# Noise level		4	2	1	4	3
Auto load		no	yes	yes	yes	yes
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SCREEN PLAY



Photo: Steve Proehl. Courtesy of The Image Bank

THE RATINGS EXPLAINED

GRAPHICS
Good graphics are an important part of any game: if the power is there, it should be used to the full. Both static and moving graphics come under scrutiny in this rating, but remember, graphic wonders alone do not a great game make...

SOUND
With stereo capabilities the last thing you want to hear are Spectrumesque beeps, right? Title tunes and effects all add to the atmosphere of a game and good sound can greatly increase your enjoyment.

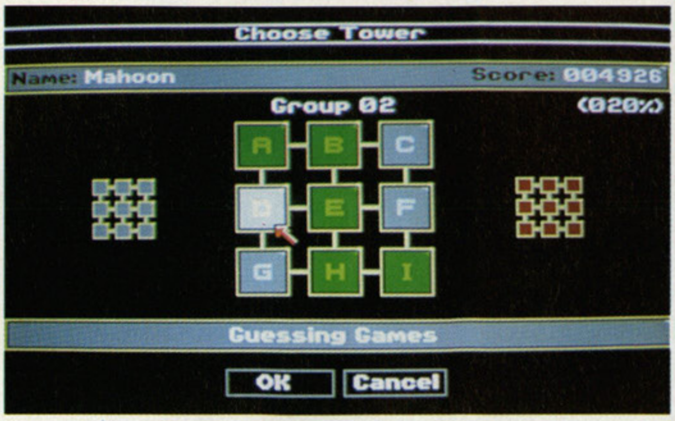
INTELLECT
How much real thought do you have to put in to play the game? Just because a game is mindless doesn't necessarily mean it's bad, but a game with a high intellect rating says immediately that you'll need to think to gain maximum enjoyment.

ADDICTION
How easy is a game to pick up and play? How much sheer fun will you get from it? Will you keep coming back? Important questions, all answered by a quick look at the Addiction rating.

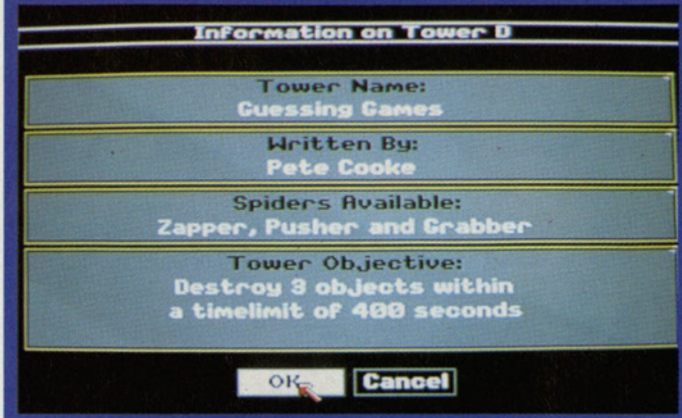
OVERALL
A percentage mark that takes into account all the ratings, plus extras like lasting interest, documentation and packaging.

THE TEAM
There are two main *Amiga Format* reviewers: Andy Smith is an ex Spectrum owner who's been playing computer games for many years now and writing about them for almost as long, cutting his teeth on *ACE* before moving onto *Amiga Format*. Andy likes any type of game, from shoot-em-up to strategy game, from adventure to arcade conversion.

Maff Evans joined *AF* after doing sterling service for *Zzap! 64*, and he splits his time between playing games and writing reviews for us and our sister magazine *ST Format*. He's another solid all-rounder who's not averse to giving Andy the odd high score contest on the best games.



Pick your tower from the block of nine...



...and read the tower objective.

TOWER OF BABEL

RAINBIRD £24.95 ■ Mouse



A quick look around from an observation tower gives you some idea of what you'll be up against.

Anyone familiar with the Bible and the book of Genesis will recognise the title of this game. According to the book, the descendents of Noah, wishing to be closer to God, built a huge tower intended to reach up to heaven. This actually struck God as being a bit cheeky, so he cursed the workers with many different languages just to confuse them and foil their plans – up until then everyone in the world had spoken the same language.

Here's where the game comes in. During the construction of the tower – this is The Word according to the manual writers – a passing spaceship from the planet Zantor decided to give the masses a hand and lent them three spider-like robots. Unfortunately, things turned sour and the humans ended up hating the robots and doing their damnedest to destroy them. After killing all the rebel humans the robots now just wish to get to the top of the tower and return to their homeland. If they don't manage it, the Zantorians will wreak havoc upon the Earth.

You're going to help the robots. Unfortunately, the evil humans have devised many traps and pitfalls to hinder the robots.

This is a solid-3D strategy and puzzle game. The tower is broken down into 125 mini-towers each of which has its own specific objective – for example to destroy two objects and collect three Klondikes, which are power packs for the robots.

The towers are grouped into blocks of nine and once you've completed seven in a group you can progress to the next block. The objective for each tower is outlined at the beginning and you're then told which of the three robots are available. The three robots are: Zapper, so called because it's the robot that can destroy certain objects; Pusher, because it can push things; and Grabber, well, you can probably guess!

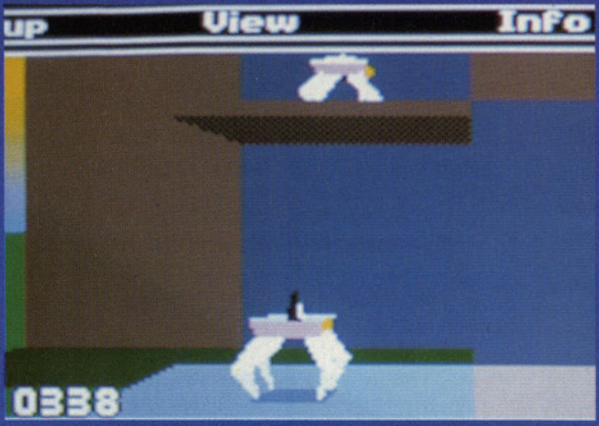
There are two main methods of controlling the robots. The first involves jumping straight into one and controlling it by clicking on movement arrows with the mouse pointer. The other way – which comes in especially handy for the towers in which you've got a time limit to beat – involves programming the robot with up to eight instructions – such as turn right, fire, move forward four squares – and then letting the robot get on with it. All three robots can be programmed in this way so they can accomplish tasks simultaneously.

You know what you have to do, and what you have to do it with – all you need to know now is what sort of things you're going to come up against.

For starters the tower is made up of (usually) more than one chequered level. Moving from one level to another requires a robot to move onto a lift square and activate it. Then there are the baddies, robots that can zap your robots, and proximity mines and the like that just get in the way.

Every tower can (honest!) be completed but it often involves moving blocks and other objects around. Many of the towers have only one solution. *Andy Smith*

GRAPHICS	8
SOUND	7
INTELLECT	7
ADDICTION	9
OVERALL	95%



On the top of this tower is a zapper firing through a converter (which turns the zaps into pushes and vice versa).



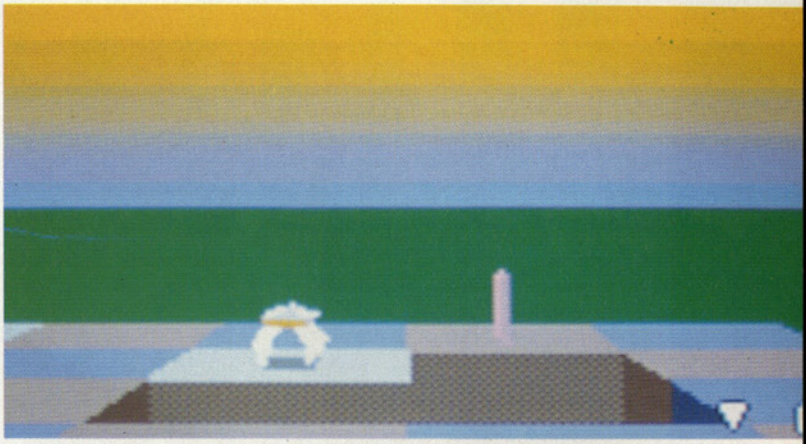
So send Pusher up the lifts...



...and when his push shots fire throught the converter...



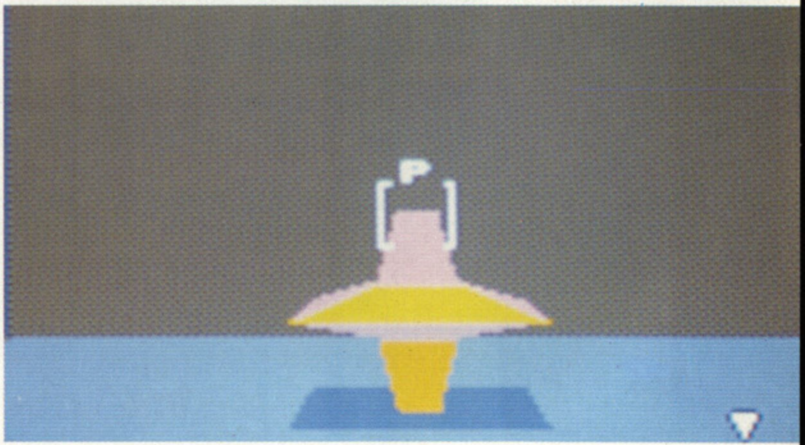
...they turn into zap shots.



There's no point sending Pusher down this lift, though, he needs to go back.



Now send Zapper up and down the middle lift.



And blast the harmless hoppers to finish the tower.

GRAPHICS AND SOUND

The sound effects and music are fine, but they're nowhere near as good as the graphics. *TOB* doesn't really cry out for good graphics, because the puzzling nature of the game doesn't rely on them, so it's even nicer to see they've been very well done.

LASTING INTEREST

The number of towers is going to keep you playing for ages (fortunately you can save your position), and once you've completed the whole game you can set about designing your own levels – yup, it's got its own tower designer. Bags and bags of lasting interest.

JUDGEMENT

A superb game. Everyone who's been lamenting the lack of superior software on their state-of-the-art machine can take heart – this is the sort of stuff that makes owning such a machine a joy. Cerebral stuff that's not completely lacking in the action department either. If you liked *The Sentinel*, this is a must.

WARHEAD

"The most disturbing aspect of this conflict is that we do not know our enemy. We do not know their reasons for attacking us. We do not know who they are".

It is the middle of the 21st Century and Earth has been violently attacked by an insect-like alien nation, from a near star system, killing billions of humans, swiftly wiping out countries and collapsing world states, throwing the Planet into the merciless hands of a nuclear winter.

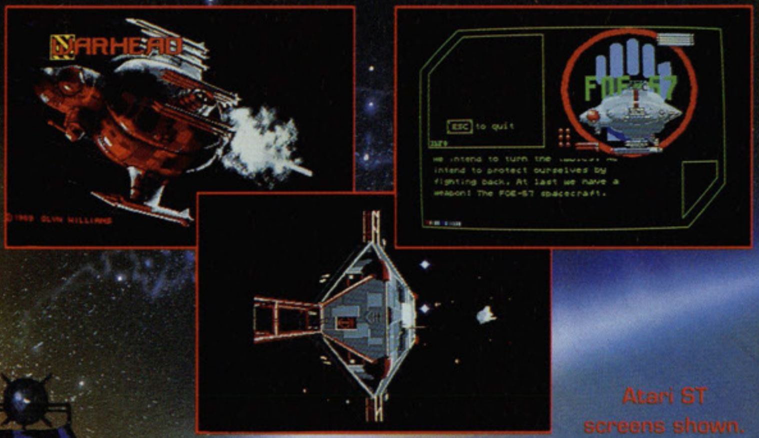
*"We intend to turn the tables. We intend to protect ourselves by fighting back. At least we have a weapon: **the FOE-57 spacecraft...**"*

As the remaining humans turn to each other for combined strength and support, the Fist of the Earth world government turn to you to lead the ultimate battle.

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Atari ST screens shown.



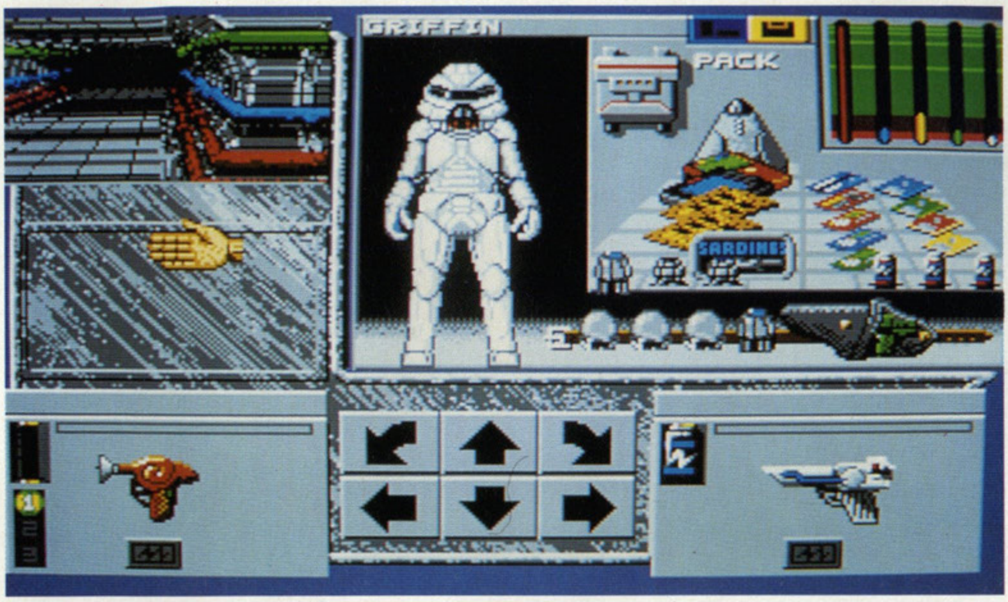
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DESIGNED AND WRITTEN BY GLYN WILLIAMS



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XENOMORPH

PANDORA £24.99 ■ Mouse

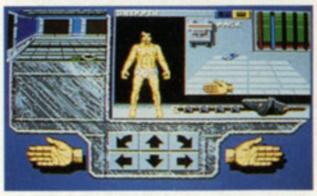
Wasn't the film *Aliens* good? A lot of people in the software industry seem to think so, as more than a few games have been released based around James Cameron's classic.

The latest to appear is *Xenomorph*, which puts the player in the boots of the Captain of supply cruiser The Mombassa Oak on a trip to Atargatis in the Sirius system. Tales have been told of ships that have set out for Atargatis never to return, which doesn't bode well for your trip!



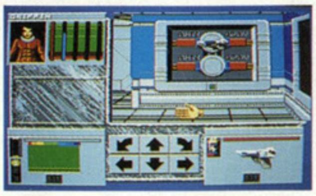
I'm afraid there's no way this ship's going anywhere with a damaged computer!

The run starts off easily enough with all systems running properly, but the Crossover Drive malfunctions while travelling into Hyperspace (or Big Empty as the trade-runners call it). The computer sytem and drives have been badly damaged, so you must search the base on Atargatis for supplies and equipment to make good your escape. On reaching the base, you soon discover the reason for the lost missions. The whole place is overrun with alien creatures – deadly enemies that kill anything not of their own kind.



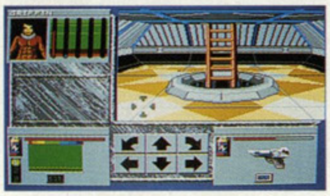
No clothes and a credit card. Right, where's the aliens...

The game starts with you in the cockpit of the Mombassa Oak, dressed in just your spotty underwear and armed only with a credit card. The surroundings are viewed via a 3D window which at the press of a button switches to show your inventory screen.



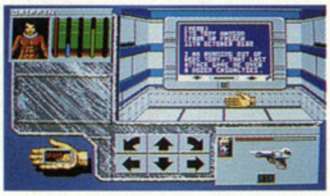
A gun! That could prove to be very useful. Who knows?

Suits and weapons can be found in the remaining cargo section of your ship ready for you to take on the marauding aliens, but extra gear that may be handy such as radiation suits, rifles and mines must be found to get to the deeper sections, where the necessary equipment for your ship lies.



This is exactly what we are looking for – a way down.

Some sections of the base have become dangerous, so there is a danger of becoming contaminated with radiation poisoning if you do not take the greatest of care. For this reason, medical supplies are essential to the well-being of would-be escapees.



The disks give an idea of what went on before your arrival.

Do you think you can overcome these amazing odds? Well, get your kit on and get out to your space ship, then! ***Maff Evans***

GRAPHICS AND SOUND

Instead of the usual filled-3D effect, *Xenomorph* uses a 'flick-screen' 3D sytem of bitmapped images to simulate movement through rooms and tunnels. Occasionally this gets confusing, but overall the effect is well implemented and convincing. The most impressive use of graphics comes in the form of the equipment. There is a myriad of weapons and technological systems for the player to pick up and use, each fitting into the game well. Unfortunately the sound is of a somewhat lower standard. Only a few actions have corresponding spot effects, such as inserting a card in a slot, firing a weapon or opening a door. If more use had been made of the sound then the game would have been a lot more atmospheric, but as it stands it doesn't have much of the 'outer-space' feel of games like *Infestation.*

LASTING INTEREST

There is no doubting the fact that *Xenomorph* is big. Use of a map is essential if you're going to get anywhere at all, as it's easy to either get lost in the tunnels or to completely miss a vital location if you're not paying close attention. Once you are familiar with the layout of the base, however, it will still take a while before proper use of the weapons has been worked out – ammo is short and there are a lot of nasty creatures – so you'll be playing for a few weeks at the very least.

JUDGEMENT

Alien-infested complexes seem to be all the rage at the moment, so it's nice to see a game that manages to create an inspired and involving environment to challenge the player.

Considering the competition that *Xenomorph* is up against, the game stands up rather well. The feel is much more 'tech' based than something like *Infestation*, using a whole host of computer equipment to complete the mission. Unfortunately, the weak sound loses to the atmospheric edge created by Psygnosis' adventure, but – this gripe aside – *Xenomorph* isn't half bad!

GRAPHICS	7
SOUND	5
INTELLECT	6
ADDICTION	7
OVERALL	83%



Fresh orders from StarCom.



Einstein-Minkowski four space, where all the combat with the Outies takes place.

Space is big – very big – and very cold too. Since the dawn of time, Man has looked to the heavens and, for one reason or another, wanted to be away from Mother Earth to find out what else is out there.

By the year 2321, we know what's out there. Outies, an alien race keen on colonising our arm of the Galaxy, have appeared and declared war on the human race (who are also keen on colonising our arm of the galaxy – it's our galaxy after all, isn't it?) by turning a sun into a black hole. The reason behind this is that black holes allow instantaneous travel to other parts of the galaxy. The objective is to rid the galaxy of the aliens.

Gravity is a single-player sugar-coated wargame. That means it's essentially a wargame, with bells and whistles to the extent that you're hardly aware you're playing a wargame. You're in direct control of a scout ship and have 15 others at your disposal (other scout craft can be sent on independent missions and you can take control of any one at any time simply by nominating it to be the flagship).

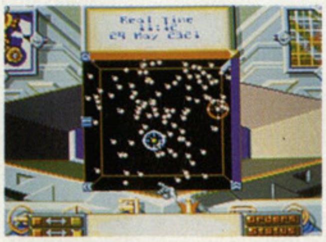
The game is played by accessing various control modules from a main screen. Orders come through from your superiors, StarCom, and then it's down to you how you carry them out. Of the main modules you'll be using the first is the Holotank, a sort of 3D map that allows you to plan routes for craft in your control and also keep an eye on how both yourself and the Outies are doing in building colonies. Another main module is The Grid, which allows you to see your ship and which is where all the action happens. It's a graphic representation of Einstein-Minkowski four space where height indicates strength of gravitational forces. Then there are modules for controlling drive systems, weapons and so on.

Getting to grips with just issuing orders is complex enough, but things really get intense when you start bumping into Outies. You're armed with basic weaponry, should you wish to take things into your own hands, but by far the best method is to issue orders to your drones. The game contains a whole programming language which allows you to program and release drones which can then take care of themselves (hopefully – it depends how well you programmed them).

For example, you can launch a drone and tell it to just continually orbit a black hole until it detects an alien presence and when it does it goes hell for leather to either destroy the alien or die in the attempt. Of course, more subtle programmes can be created.

It's all very well flying around the galaxy, sending ships on missions and programming drones, but the real object of the game is to build colonies. Without colonies you can't buy new equipment, which means the Outies are going to get the upper hand. It's all a question of maintaining a balance between destroying the Outies and increasing man's presence in the galaxy, with colonies acting as the scales.

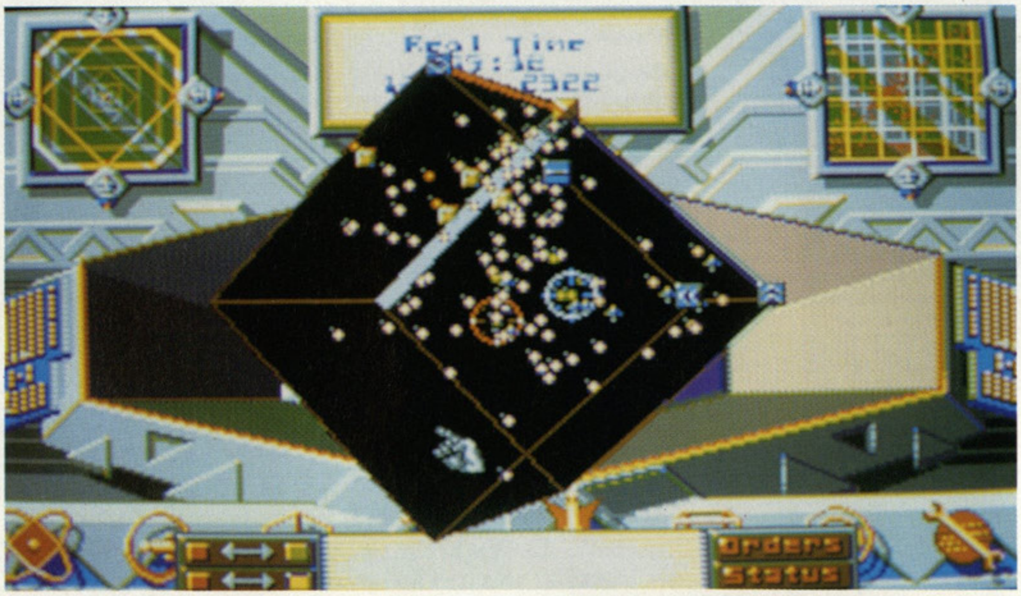
Andy Smith



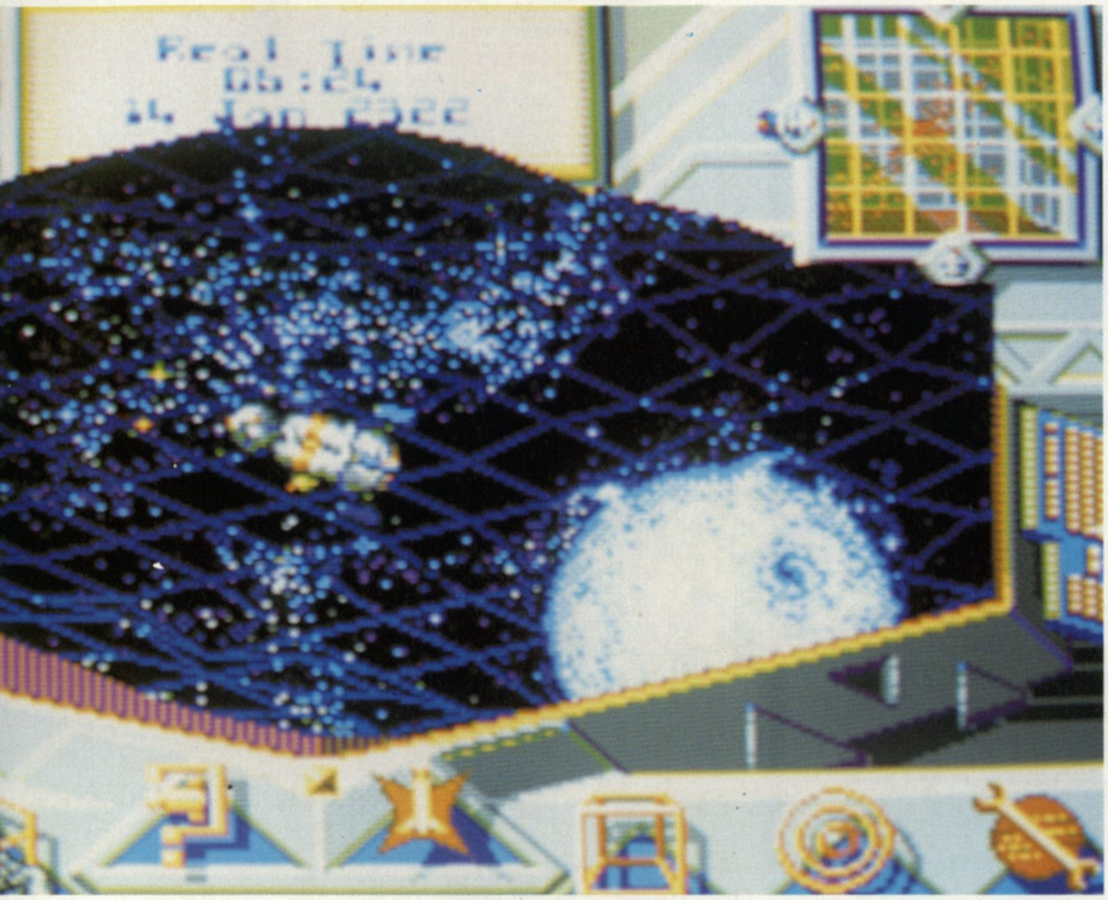
The Holotank, where you get a 3D representation of your bit of the galaxy.



A quick check of the system tells you everything's all right.



The Holotank again, which can be rotated until you are quite clear where everything in this bit of space is placed, relative to everything else.



GRAVITY

MIRRORSOFT £24.95 ■

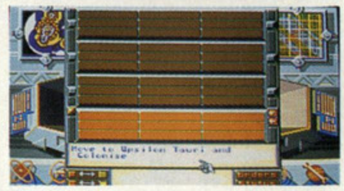
Mouse and Keyboard



A look at your ship to check for any damage.

GRAPHICS AND SOUND

The sound is perhaps not as good as it could be, being limited to the occasional blast and explosion. The graphics, however, are much better. The module design is good and is easy to use and all the 'real-time' 3D stuff is fine. It does tend to make your Amiga look like an ST, but then so do a lot of games – the real point is whether the graphics do their job properly, which, you'll be pleased to find, they do.



Issue orders and you're away.

LASTING INTEREST

There is a multitude of options which you can alter to make your life more complicated, the main one being the amount of work shared between you and StarCom – that is the amount of strategic work you have to do or let StarCom do for you. Let StarCom handle most things while you familiarise yourself with the game. This increases the game's lasting interest substantially, but it was hardly lacking in the first place – it's going to take you a long while to learn to play well.

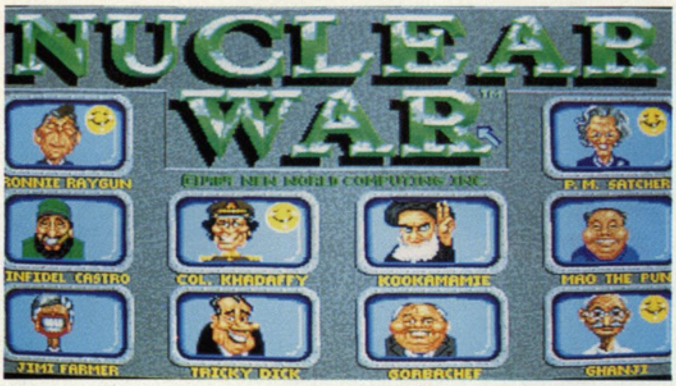


The drone-programming module.

JUDGEMENT

A lot of work has gone into *Gravity*. It's highly polished and hangs together very well. It may not be everyone's cup of tea, but if you're prepared to put the effort in (because it takes some effort in the early stages to get to grips and find out just what is happening) you'll find it becomes very involving and very satisfying. Prepare yourself for some long playing sessions. A great game that has been well thought out and well executed.

GRAPHICS	8
SOUND	6
INTELLECT	7
ADDICTION	8
OVERALL	91%



The world leader selection screen. The leaders have different playing styles, but they all want to rule the world in the end.



At the end of each turn you get to see what actions the leaders ordered last turn.

NUCLEAR WAR

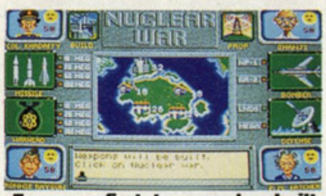
US GOLD £19.99 ■ Mouse

It really is a mad, mad, mad, mad world, you know, and if we stopped and thought about it we'd be in tears most of the time. New World Computing Inc have the right idea: take a very serious issue and poke fun at it.

Nuclear War is a simple, single-player wargame played between four players – three computer-controlled – who all want to rule the world. At the start of the game the player picks which world leader he'd like to be from a list of 10 dubious characters such as Mao The Pun and Infidel Castro. He also picks the opponents and the game begins.

Each world leader is given a country containing five cities, the idea being to protect your cities and knock out the enemy's. Once a leader's five cities are gone, he is out of the game. Nuclear War is played in turns and you can choose on action per turn. The available options include: build, where your citizens do nothing but build up your nuclear arsenal; propoganda, where you try and entice the citizens from another country to come and join you; defence, in which you simply deploy some defence equipment if you think you're going to be hit by another country; and finally you can elect to make ready your own strike on another country.

The whole game is played by trying to guess what the world leaders are going to do and if possible keep them sweet, so they don't bomb you but go after someone else instead. Then it's simply a case of seing who can hang on the longest to inherit a desolate Earth.
Andy Smith



For your first turn you've built up your nuclear arsenal.

GRAPHICS AND SOUND

There are few sound effects but the graphics are much better. It's not really a visual game but everything has been done well and with the tongue firmly in the cheek.

LASTING INTEREST

It's far too simplistic and limited to have you playing more than a few times.

JUDGEMENT

Simple, easy-to-understand fare that has a wicked sense of humor to recommend it but little else. Certainly no meaty gameplay.

GRAPHICS	7
SOUND	4
INTELLECT	4
ADDICTION	6
OVERALL	51%

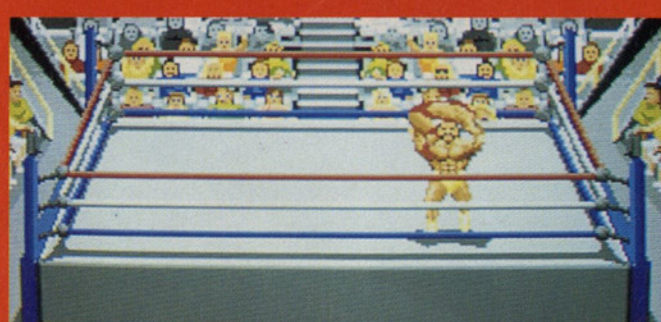
INTERNATIONAL CHAMPIONSHIP WRESTLING

HEWSON £24.99 ■ Joystick

Wrestling is enjoying something of a comeback at the moment thanks to international personalities like Hulk Hogan and the Ultimate Warrior, and cashing in are Hewson.

It's a one or two player game in which the player has to take on such greats as Ivan 'The Bear' Trotsky. All the usual moves are there, initiated by pressing the fire button and moving the joystick to a effect a move or make a throw.

There are three difficulty levels but that doesn't help things much. The gameplay is appalling: both awkward and unrewarding. Only seriously dedicated fans need bother with this. Wrestling games don't appear too often, for a very good reason... *Andy Smith*



"Aaaaahh, oneaaaaa, twoaaaaa,threeaaa"

GRAPHICS 6 / SOUND 3 / INTELLECT 2 / ADDICTION 3 / OVERALL 24%



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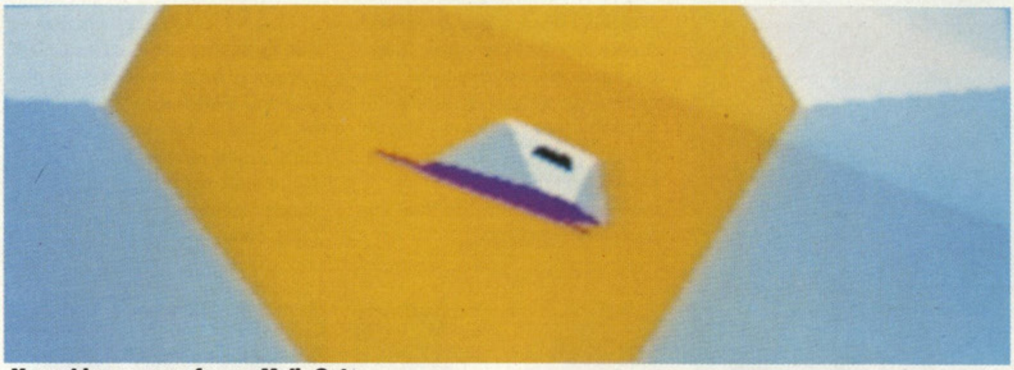
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Your ship emerges from a Malir Gate.



Sundiving in a scoutship is not to be recommended!

SPACE ROGUE

MINDSCAPE/ORIGIN £29.99 ■

Keyboard, Mouse or Joystick

Anyone who has played *Elite* will know roughly what this game is about. You play a square-jawed young hero, striving to become the best pilot in the Far Arm. You can trade, go bounty hunting, or try your hand at piracy (definitely not recommended unless your ship is equipped with some mean hardware).

In *Space Rogue*, humans have never developed faster-than-light travel. Travelling between stars would take years were it not for 'wormholes', strange tunnels in space that connect systems. A mysterious alien race, called the Malir, constructed travel gates around the wormholes and humans used them to found the Imperium. Unfortunately, the wormholes don't connect all parts of the empire.

The Far Arm, where the game is set, is an isolated region on the edge of the Imperium. Deneb is the capital, and controls a number of systems. Each system consists of one or more stars, along with planets, asteroid belts, anti-matter clouds and other navigational hazards. Nearby is an area claimed by a hostile alien race called the Manchi, who occasionally raid across the border.

The game begins when your ship, the Princess Blue, discovers a derelict scout. The Captain orders you to go and take a closer look but unfortunately while you are poking around ten Manchi ships turn up and blast the Princess into space-dust.

The scout is something of a Marie Celeste: everything is working, but there is no sign of the crew. By law the ship is yours to keep, and thus your career begins. But there is more to it than that: the scout's crew were up to something important, and as you discover more you find you have unexpected friends and enemies...

Adie Stewart

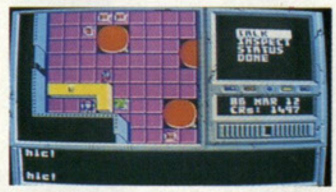
GRAPHICS AND SOUND

There are a number of different screens, each with its own unique style. The most important is the cockpit of your craft, where you control such things as docking and space combat. The navigation panel provides a map, and a menu that covers most of the other controls. The graphics are clear, but are chunky and poorly animated. The same is true for moving around inside bases, while in-system travel is literally nothing more than looking at a map and reading the occasional message.

Sound consists of an occasional beep, whistle and bang – even in the introduction, where the programmers had a chance to show off, there was little more than a rumble and a shrill siren. The sound can only be described as woefully inadequate.

LASTING INTEREST

The packaging is impressive: plenty of paperwork, including a very nice map of the Far Arm and an instruction book. The designers have even included two cardboard ships for you to make! The game can be played using keyboard, joystick, or mouse: if you do play using the keys you need fourteen spare fingers, and what makes it worse is that you can't redefine the keys at all. In order to use the mouse you need to have passed a course in 3D astronavigation: stopping the ship spinning was a headache, and combat was a nightmare. Only the joystick proved useable, and required only a few additional keys.



Sampling a few tipples in the cantina leaves you smashed out of your face!

JUDGEMENT

***Space Rogue* is, well, primitive and the graphics are a big disappointment. Don't get me wrong, the game itself is playable and intriguing, but it certainly lacks that vital spark.**

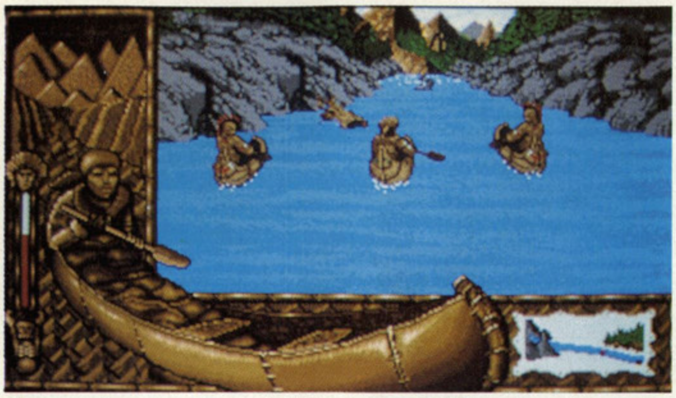
GRAPHICS	5
SOUND	3
INTELLECT	7
ADDICTION	5
OVERALL	55%



A close pass on an Imperial Titan battlecruiser.



In-system navigation guides you safely past the sun.



The arcade canoe section. Biff the Indians with your paddle.

COLORADO

PALACE £24.99 ■

Joystick or Keyboard

Palace have enjoyed a good deal of success since their signing up of French software house Delphine, thanks to great games like *Bio Challenge* and *Future Wars: Time Travellers*. Now they've signed up another French house, Silmarils, and are hoping for more of the same.

Colorado is an icon-driven arcade adventure. You play the part of one David O'Brian, a trapper, womaniser and drunkard in the American South at the end of the last century. After an uncharacteristic act of bravery, you were rewarded with a treasure map which you believe will lead you to the location of a lost gold mine.

The game is viewed side on, for the most part, and the idea is to explore the land, solve mysteries and fight unfriendly Indians. You're armed with a gun, tomahawk and knife and fighting involves holding the fire button down and moving the joystick around – as you'd expect. When in non-aggressive mode, you're in direct control of Dave and can decide where to go and what to do.

At the start of the game you are standing on a river bank having just climbed out of a canoe: a pathway heading off screen leads to adventure. Clues and objects found scattered along the way can be picked up and carried.

Once an area has been explored to your satisfaction and you wish to move on, simply jump into your canoe and enter an arcade game. As you paddle downstream you must avoid boulders, logs and unfriendly Indians before pulling in at a new location. Wander around, solve the puzzles, and maybe in the end you will make it rich. ***Andy Smith***

GRAPHICS	7
SOUND	5
INTELLECT	4
ADDICTION	5
OVERALL	62%

GRAPHICS AND SOUND

A very nice-looking game. The backgrounds are very well drawn, the sprites are nicely animated and the overall look of the game is good. The sound effects and music are not so memorable but they do their job perfectly adequately.

LASTING INTEREST

The problems and puzzles require quite a bit of thought and some of it lateral as they're not as logical as they might be. It'll take a long time to solve, but fortunately the game will save your position every time you pitch camp.



Along the riverbank and all ready for some action



No, it's not a bear-a-gram, this monster means business.

JUDGEMENT

This could have been a lot better. The control of your character is awkward and frustrating which spoils the enjoyment. The basic game structure is not much more advanced than old Spectrum games like *Pyjamarama* and the thousands of similar games around in the early Eighties. Definitely one for those with immense patience and determination.

HOT ROD

ACTIVISION £24.99 ■

Joystick or Keyboard

Collect the symbol in front of your red car in order to gain extra points.



If you're one of those people who hangs around in an arcade all day, you might just remember a driving game called *Hot Rod* from Sega.

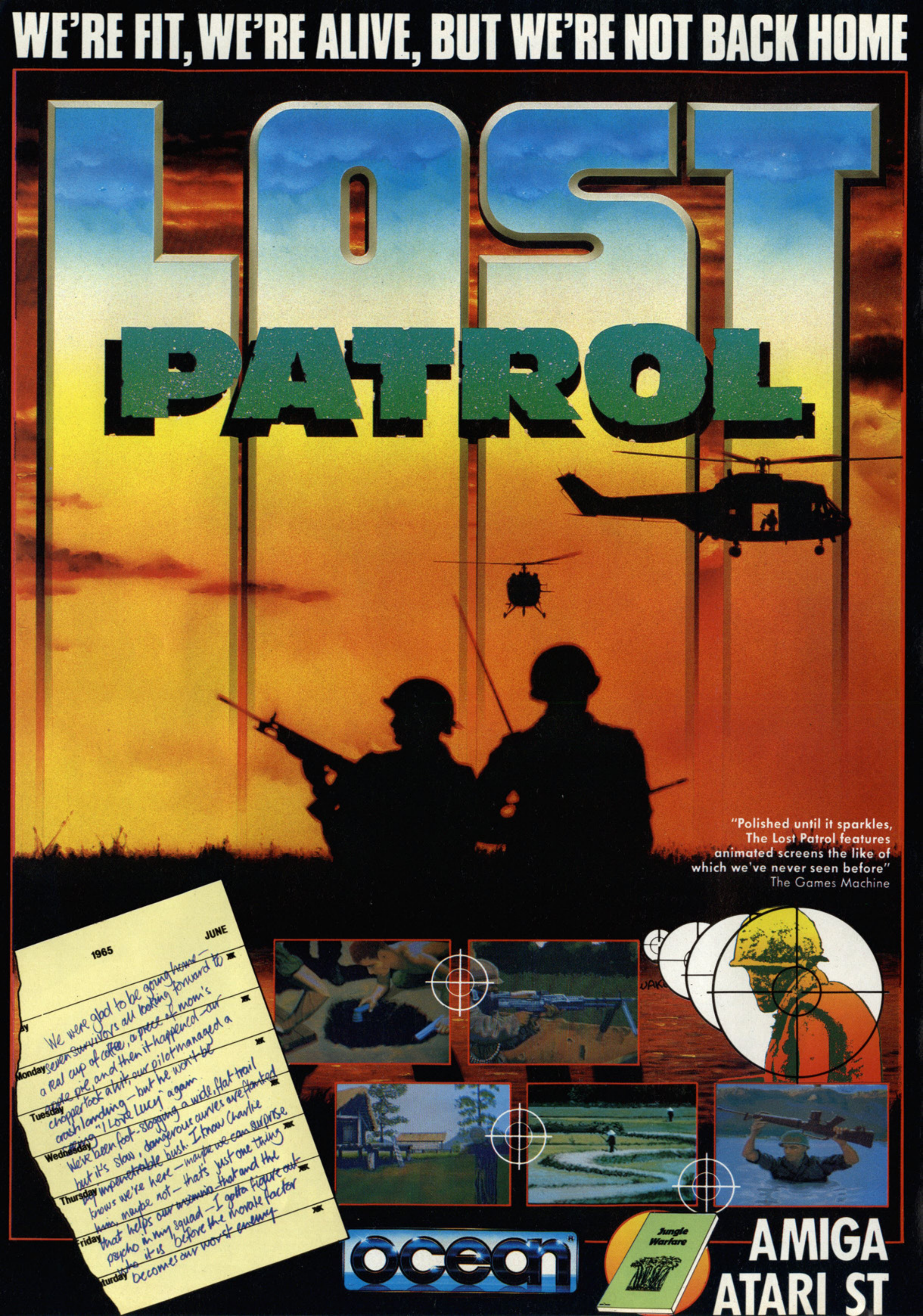
The game is in a similar mould to *Super Sprint*, the only difference being that *Super Sprint* is better. The view is an aerial one of your own car and the three others that you have to race against. The object of the game is to get around the track as quickly as possible thereby obtaining loads of dosh with which to build up your car. Once you've done this it's just a case of trying not to crash or run out of fuel because if this happens it's back to square one.

The gameplay suffers from a few flaws in conception: the screen is not centred on your car, so every time the leader pulls away from you the computer places you behind him and you lose twenty points from your fuel. When you run out of fuel you'll find yourself saying 'hello' to the end credits. You also don't get a real impression of speed: but you can have a few friends along to join in the mayhem which partly makes up for it.

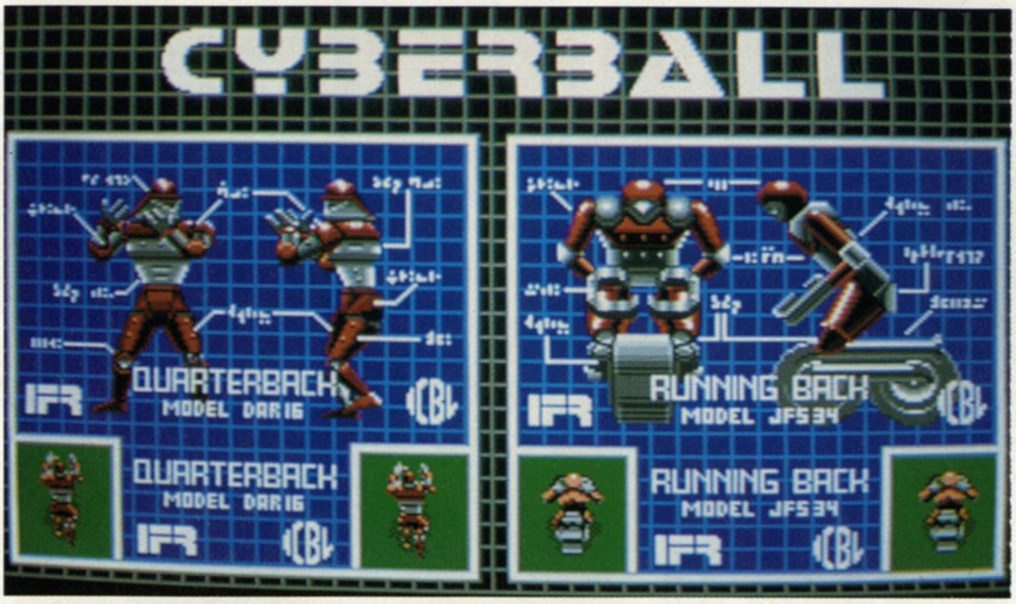
The sound is quite reasonable, adding something to the overall appeal of the game. The graphics are colourful enough, but again they are not amazing. Generally the game is unremarkable but if you did like the arcade game or you have a soft spot for racing games as a genre then you are likely to find it pleasurable for a while. *Adrian Price*

GRAPHICS 7 / SOUND 5 / INTELLECT 1 / ADDICTION 5 / OVERALL 66%


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WE'RE FIT, WE'RE ALIVE, BUT WE'RE NOT BACK HOME
LOST PATROL
"Polished until it sparkles, The Lost Patrol features animated screens the like of which we've never seen before"
The Games Machine
1965
JUNE
Monday
Tuesday
Wednesday
Thursday
Friday
We were glad to be going home — seven survivors all looking forward to a real cup of coffee, a piece of mom's apple pie, and then it happened — our chopper took a hit, our pilot managed a crash landing — but he won't be seeing "I Love Lucy" again
We've been foot-slogging a wide, flat trail but it's slow, dangerous curves are flanked by impenetrable bush. I know Charlie knows we're here — maybe we can surprise him, maybe not — that's just one thing that helps our insomnia — that and the psycho in my squad — I gotta figure out who it is before the morale factor becomes our worst enemy
Jungle Warfare
ocean
AMIGA
ATARI ST



For technical freaks, here's the spec on a couple of players.

CYBERBALL

DOMARK/TENGEN £19.99 ■ Joystick

American football is a strange game at the best of times – though it's enjoying something of a boom at the moment on this side of the Atlantic – but just imagine what it would be like if all the players were massive robots who wouldn't look out of place in the comic 2000 AD. Domark's conversion of this Atari coin-op gives you the chance to find out.

The game contains six teams, two in the instruction league and four in the pro division and you play the part of a player/manager of one team. Each team contains a handful of robots and the game is played (more or less) with the conventional American Football rules. One team starts on offense and the other on defense. The offense team has to attempt to get the ball across the opposition's goal line and thereby score a touchdown. The defense, of course, have to stop them.

Play usually continues until the ball hits the ground, at which point it stops and the offense and defense line up again at the point where play stopped and go through the whole process again. There are, however, a few important differences, the biggest being the ball itself.

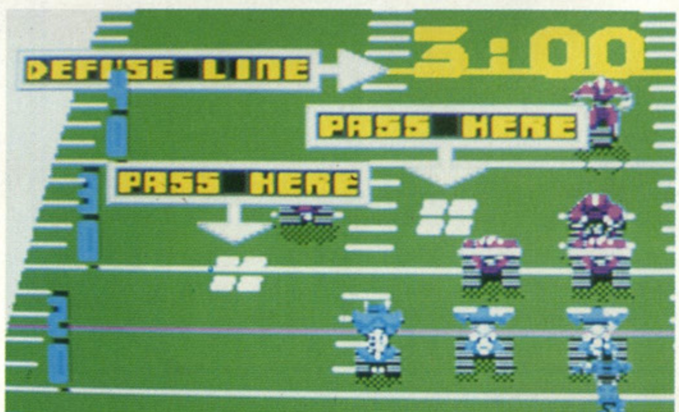
Normally, the offensive team have four attempts to move the ball at least 10 yards forward. In cyberball there's no limit to how far the ball must go, but after every play the ball warms up and if it doesn't cross either the centre line or the goal line within four attempts, it blows up. This not only gives possession to the other team but it also does a great deal of damage to your robots.

The way to get your robots repaired is by either gaining possesssion of the ball or scoring some points, so try not to let too many get blown up eh!

There are six periods to each game, each period lasts three minutes and as well as the clock ticking down during play, it also ticks down while deciding which plays to make. This is the manager side of things, when at every break in play you get the chance to choose the formations and try to outwit the opponents (both during defense and offense).

Crash and sack your way through the game and take on another opponent. In two player mode you and a mate can play on the same side and take on the computer team. *Andy Smith*

GRAPHICS	7
SOUND	6
INTELLECT	4
ADDICTION	7
OVERALL	71%



The start of a passing play. Once the ball is thrown control switches to the reciever who you have to get to the area marked to recieve the ball. If he makes it he can carry on running until tackled.

GRAPHICS AND SOUND

There are some nice effects and bits of sampled speech. The graphics are good too and are very close to their coin-op parent. Fine in both departments.



Deciding a play on offense. Your funds are very low though, so you will have to pull out all the stops and put together some good plays now.

LASTING INTEREST

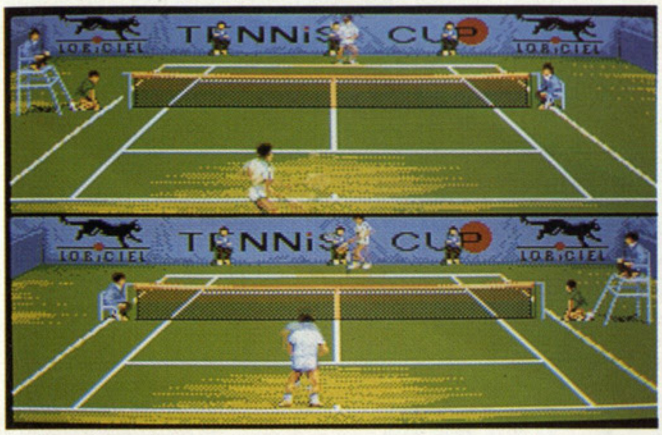
It's not a laster. It will not take long to learn how to beat the other computer teams, which is a shame, things perk up when you play in two player mode – but not quite enough.



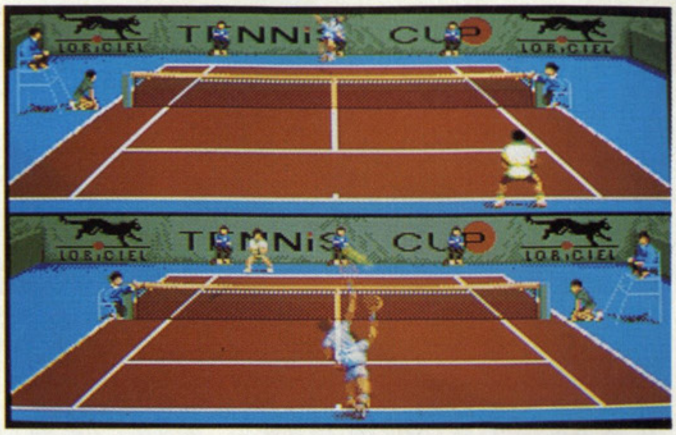
A running play. Notice the runners positioned just behind the quarterback waiting for the ball.

JUDGEMENT

A simple, playable and enjoyable game which has been well converted. It's not going to keep you going for months but it's good for short-term fun.



In the middle of a grass court singles match. The two screens mirror the action from either player's point of view.



A sudden change in the weather and the game is continued indoors. Here we are mid-serve, with the player's action pose freeze-framed.

TENNIS CUP

LORICIELS £24.99 ■ Joystick

Tennis has a come a long way from two oblong bats and a small white square blipping around a rectangle. Loriciels' latest simulation brings a new sense of realism to the game with simultaneous two-player viewpoints, and a high level of aesthetic authenticity.

As expected, the game supports a whole range of gameplay options, such as the type of court (clay, hard, grass and indoor), length of game (1, 3 or 5 sets), and speed of play (high, medium and low). You may also select to practice against a ball-hurling device before deciding to play a match proper.

Having opted to compete against a human or computer-controlled opponent, you can then choose the venue: whether it is to be a friendly one-on-one, or as part of a grander competition, such as the Davis Cup.

Your player's nationality can be appointed via a host of national flags (could it be a subtle French sideswipe at the Brits that the Union Jack is oddly absent?) and your playing characteristics can be customised to suit. A range of playing abilities – such as service, volleying etc – are allotted a percentage rating from a set credit allowance. Your player's characteristics can then be saved to disk, allowing a player's prowess to be gradually improved with time.

Steve Jarratt

GRAPHICS AND SOUND

The players are beautifully animated, and the split-screen views are extremely realistic and detailed. The single fly in the visual ointment is that the screen jerks to one side or the other instead of scrolling smoothly, which can be slightly off-putting.

Sampled sound is used to great effect throughout, with amazingly clear speech for the score, game status and line calls. Digitised spot effects like the thwack of ball on racket and turf similarly help to boost the believable atmosphere.

LASTING INTEREST

Sports simulations have terrific longevity due to the nature of the beast. With loads of options, a good two-player game and a decent computer opponent *Tennis Cup* should be a reasonably long term investment.

JUDGEMENT

The split-screen viewpoint is a distinct improvement over previous attempts, since there is invariably some discomfort when one player is forced to play from the opposite 'end'. However, the narrow screen means that the ball often flies out of view – especially during the all-important service – resulting in several moments of complete confusion.

There is also a terrible buffer between pressing the fire button to initiate a stroke, and your player actually doing it. This proves to be a serious hurdle for the first few games until you get into the swing of things.

Tennis is tennis, take it or leave it. This offering from Loriciels is nicely executed, but not so amazingly ground-breaking that it could replace any other half-decent tennis game in your collection.

GRAPHICS	8
SOUND	9
INTELLECT	4
ADDICTION	7
OVERALL	83%

DYTER 07

RELINE £19.99 ■ Joystick and Keyboard



When all the patrolling robots have been destroyed the flaming volcano crater is extinguished, allowing the Dyter 07 to descend to the next level.

They have never been noted for original software, reLINE, and to be frank this is *Choplifter* with knobs on. If you're unfamiliar with the aged coin-op and its multiple conversions, the aim is to guide a helicopter across horizontally-scrolling landscapes, blasting everything that moves, and buildings that don't. Prisoners, released from the derelict constructions, are collected for return to base.

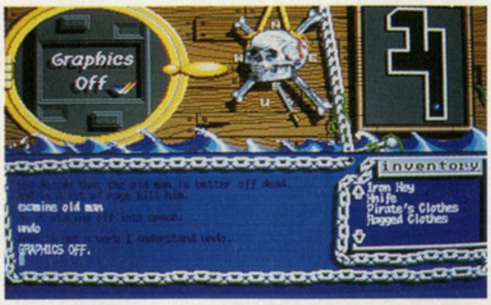
In *Dyter 07*, the little prisoners are replaced by equally little scientists who, upon repatriation, busy themselves building new weapons to bolt onto your chopper, such as shields, multi-way shots, missiles and soon. Another twist is that the chopper carries a small tank for land-based battle plus an amphibious craft for aquatic attacks. Destroy all the robot enemies specified by the radar and you can exit this landscape to the next. And that's about yer lot.

The sound and graphics maintain an amateur status throughout, and there's precious little to get the grey cells into gear. The action is predictably hectic and moderately entertaining at first, but the invariant and incessant blasting action just grows ever more weary. *Steve Jarratt*

GRAPHICS 4 / SOUND 3 / INTELLECT 1 / ADDICTION 4 / OVERALL 47%



It's not easy being a revenge-seeking young pirate. But it is all too easy to get ratted!



The 'Graphics Off' mode allows you to Save and Load saved games... if you're lucky.

THE ISLAND OF LOST HOPE

DIGITAL CONCEPTS £24.95 ■

Mouse and Keyboard

Nothing tastes as sweet as a well-rounded revenge ragout with treasure to follow – and that's top of the menu in this new adventure. You are out to do some severe sea-going damage to the unimaginatively-named Captain Black. This pirate has caused you much heartbreak in the recent past, the upshot of which is that you're stuck on a desert island.

The first section of the game serves an interesting purpose in that it goes nowhere near setting the tone for the rest of the game. Hints are flung at you like flowers to a prima ballerina. In fact 'hint' is slightly misleading, unless you consider yelling "your flies are undone!" at the top of your voice when someone has their zip at half mast to be a subtle clue.

Once you're off the island however, the game moves up a gear. The trip from islet to ship, for example, contains a little animation in the small graphics box and the sea swirls mellowly from the speaker. If you've done everything you should have, the pirates will not notice as you come aboard and begin to explore.

On the top left of the screen is a panel which, at the outset of the game and at each new stage, contains a small brown square with a tiny blue sphere in the middle. This, me hearties, is your map – and jolly handy it is too. Map making is always one of the more irritating parts of playing adventures and this little gem allows you to concentrate on looking, taking and killing things stone-cold dead... in a caring way of course.

Due to the fact that the plot is a little weak – all you really know from the scenario is that you have to get revenge and collect some treasure, no racing against clocks or being chased by ghouls – there is no real feeling of urgency to the game. This can work in your favour if you blend in with the corsairs and only violently end people's lives when things are quiet.

In the top centre of the screen is Johnny Skull. Aside from the fact that he (or she... might be a woman) is rather nicely drawn, it's not really of that much use. Its purpose in life is to allow you to point your mouse-sword at various areas around it labelled N, S, W and so on. Because text is entered from the keyboard into the lower half of the screen, it becomes a pain to use the skull and mouse-button for movement. It might have been of more use to see an expanded graphics window but never mind, Johnny Skull is OK.

So, the basic plan of action is to not give yourself away, carry out the occasional assasination, make a friend and prepare for a final confrontation with the despicable freebooting captain. Fine and dandy and er... that seems to be it. ***Tim Smith***

GRAPHICS AND SOUND

At last, at long last, an adventure with sound. The sea wishes and washes around and is your companion for most of the game. Every so often its relaxing swish is punctured by keys clanking, doors creaking open and a heartbeat or two. Death is greeted by the classic, doomy "Ha ha ha ha" in a deep throaty voice. Turned to about quarter volume these sounds are pleasingly effective and serve to lock your concentration into the task. With no pimple rock soundtracks to break that concentration, the audio is an addition – thank goodness.

Graphically, *The Island of Lost Hope* is nicely formed. The occasional animated section crops up but for the most part what you get are static images in the window, top right of the screen. They are all cleanly-drawn and don't eat up time when they flick on and off as if appearing through Venetian blinds. The rest of the screen, including Johnny Skull the dead direction deliverer, is bright and clear. The mapping is fast and even if mixing brown with blue is considered tonal suicide in some quarters, my dear, it all works for me.

LASTING INTEREST

Well, put it this way – you might like to come back to it now and then when your joystick finger grows weary but, unless you're a true adventure freak, it lacks a suitably gripping plot to keep you staying up all hours.

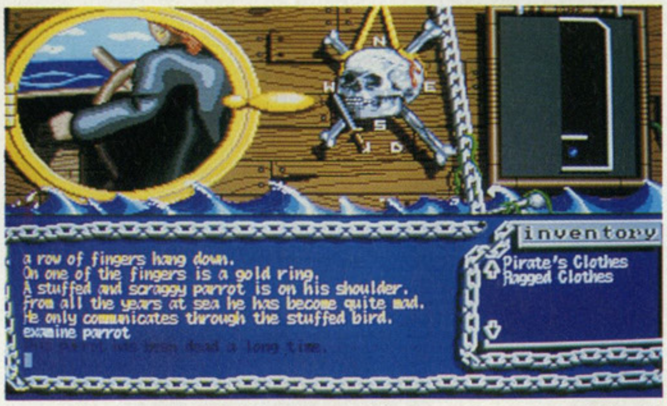
It's not that it's boring – anything but – there just seems to be a lack of incentive, no real bite. There are witty elements now and again – the fact that the captain only communicates via his parrot – and this give some flavour. But the puzzles tend to the obvious and the other pirates seem a tad, well, thick as two short walking-the-planks.

Happily, death does not hit you too illogically or from all angles and unless you do something really dumb, like hacking at the captain with a coconut early on, you should be able to keep going. All in all a relaxing outing which is worth playing just to see how much more intelligent you are than the opposition.

JUDGEMENT

Not guilty on any counts such as illogicality or super-easiness, *The Island of Lost Hope* is a well-rounded game which could do with a follow-up to really test your mettle. At no point during the game can you relax totally – there's always a chance of giving yourself away and the rat, for example, really does kick some ass until you conquer it.

The only weighty omission is a lack of plot to grip you. The accompanying reading matter concentrates on the use of function keys and commands rather than setting you up with some sense of avenging yourself or even knowing where you should be going. As Dustin Hoffman might pontificate, "It's real hard to relate to your character, man". Generally, however, *The Island of Lost Hope* is eminently playable, not too far off the mark and capable of supplying a few thrills and brain teasers. It might not run and run but while it's can-

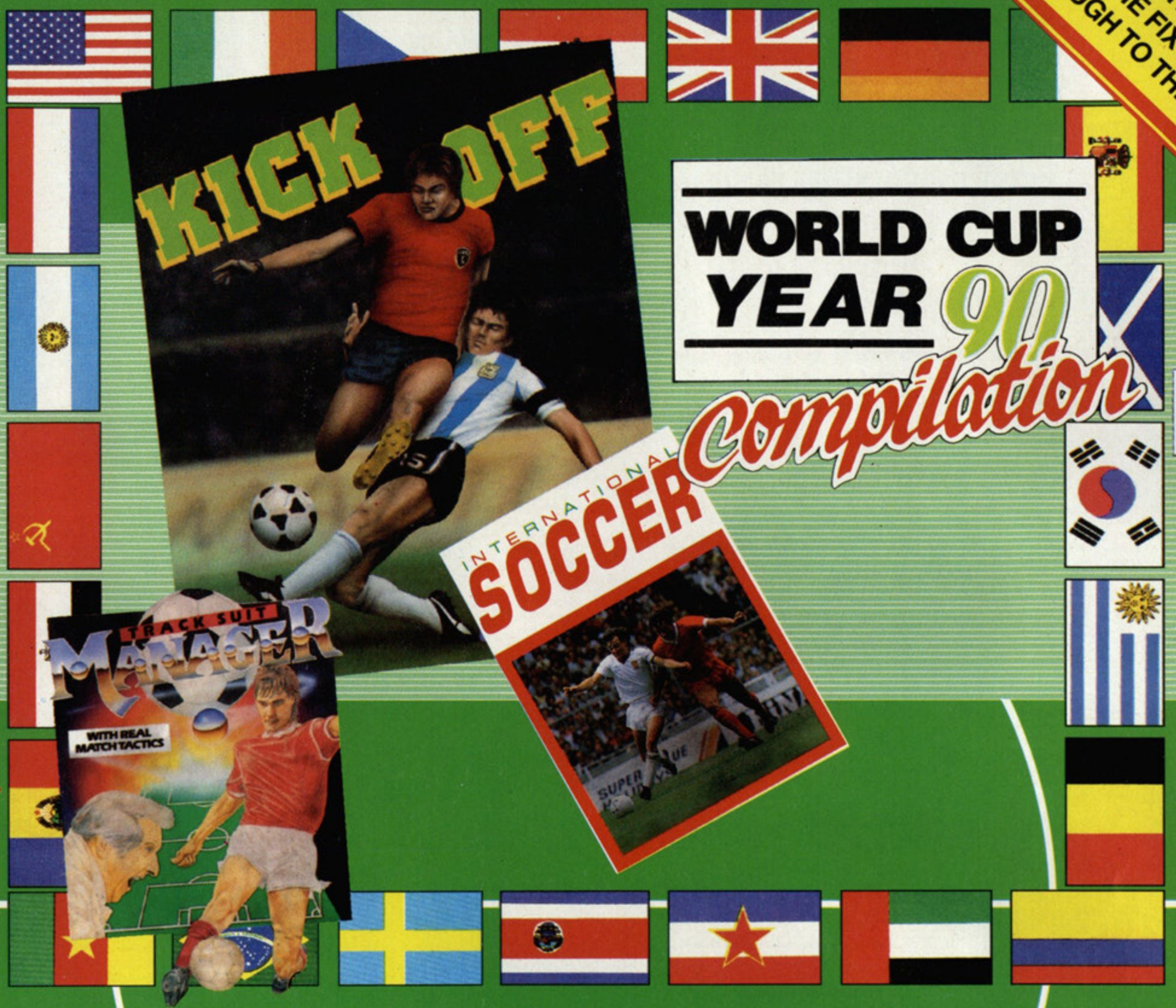


Now, this looks like the ideal moment to decapitate the Captain – if you're tired of living, that is.

GRAPHICS	8
SOUND	8
INTELLECT	6
ADDICTION	7
OVERALL	80%

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"The best ever managerial game" Sinclair User Classic 93%







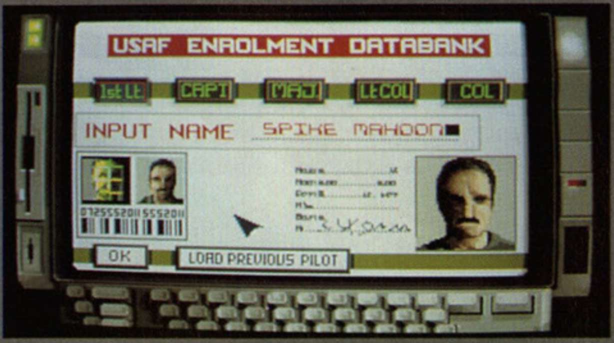
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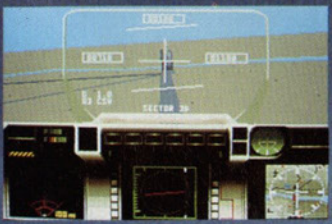
Here's where you sign in.

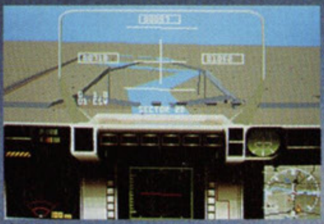


Pick your plane...



...and load up with the weapons. Check the mission briefing first or you could make the fatal mistake of loading up with the wrong sort of firepower.


That bridge needs destroying to halt the tank and truck convoy that want to cross it.


That's stopped the tanks, so now it could be a good time to go for the trucks.


There's a nice convoy, just right for strafing. They've pulled off the road because you're around.


An out-of-cockpit view of your airplane polishing off a couple more of those trucks.



F-29 RETAL

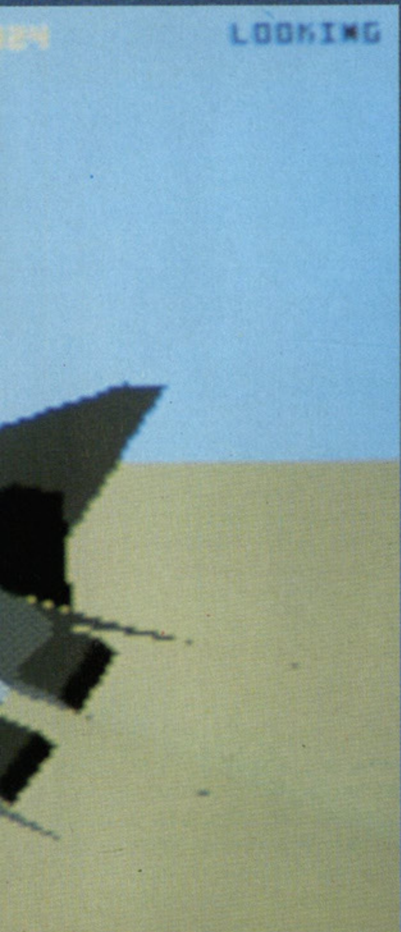
OCEAN £24.95 ■ Joystick, Mou

Aircraft technology has advanced massively in the last 20 years, especially since the introduction of the microchip. Nowadays pilots, especially fighter pilots, can spend less time bogging themselves down with flying the planes and more time concentrating on the important things like hitting the enemy and ensuring they don't get the chance to do the same.

Within the next couple of years the 'superplanes' that first appeared on drawing boards ten years ago will start entering service. Two possibilities in that line up are the Grumman F29 and the Lockheed F22, both of which star in this combat/flight simulator devised by Ocean and loosely based on the believed performances of the planes.

Set in the future, when the planes are in operation, the game contains four theatres of war: Europe, Middle East, Pacific and America. The American theatre is just used as a training ground against simulated targets. The other theatres give a list of missions to choose from – the exact number depending on your rank, which you decide for yourself.

Spend a while getting to know the planes (at Lieutenant level where you have infinite weapons is a good idea) and once confident enough, select a theatre. Work through the missions – every time you get killed a new pilot's log has to be created – and once you've completed them, the war you're in moves on a day, more missions appear and the war situation is updated. The missions range from deep strike, where you're hitting anything from SAM sites to bridges and battleships, to dogfighting with incoming bombers and fighters. Get bored with one sort of landscape and





LEFT: An outside view of leaving the base in the Middle East on another mission in the F22.

ABOVE: Three bogies coming in – let loose with a sidewinder.

BELOW: In the Pacific this time, and that battleship isn't going to be there much longer.

IATOR

se or Keyboard

you can always ask to be posted to another theatre.

For the very impatient or for those who fancy a quick flight without having to do a mission there's always the Zulu option which puts you in mid-flight against an enemy plane. As you would expect, everything is viewed from the cockpit – although out-of-cockpit views can be accessed at the touch of a button – with most of the mechanics handled from the keyboard (lifting and dropping landing gear and such like). So all you really have to do is go out there and get 'em.
Andy Smith

GRAPHICS	9
SOUND	7
INTELLECT	7
ADDICTION	8
OVERALL	92%

GRAPHICS AND SOUND

The spot effects are fine, a few more would have been appreciated, but most of the sound is limited to the rushing air and the low drone of the engines – atmospheric but not outstanding. The graphics are another story. The 3D is super fast – arguably the fastest yet seen in a combat flight sim – and the ground detail is superb. The variety offered by the different theatres is also very nice to see and overall it's obvious a lot of work has gone into making this look as good and as fast as it plays.

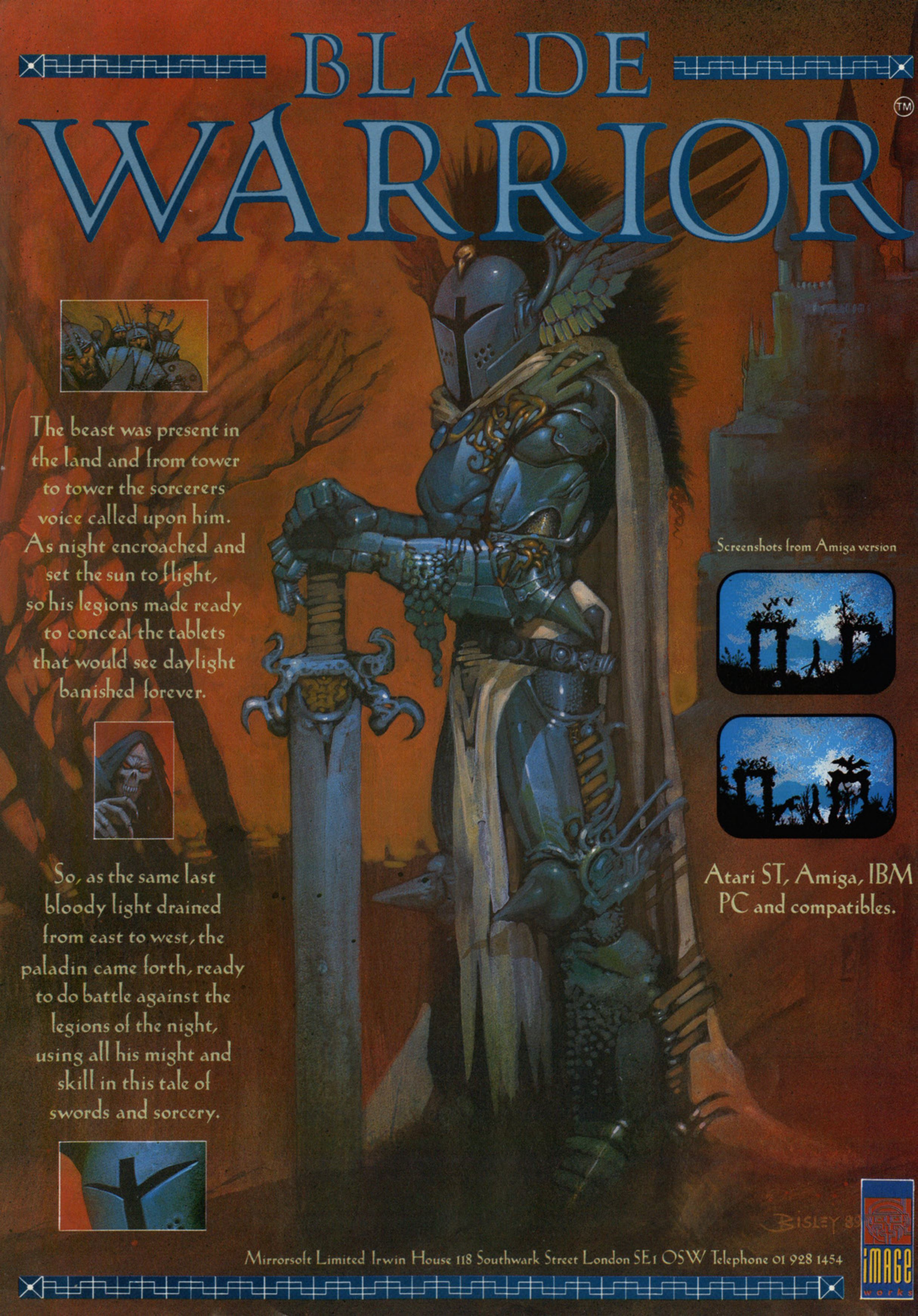
LASTING INTEREST

Heaps of missions and several difficulty levels – who could ask for anything more?

JUDGEMENT

Excellent stuff! If you've saved the world already in *F-16 Combat Pilot* and are looking for some new challenges then this is the one to go for. The emphasis is much more on the action side than the flying side and everything hangs together terrifically well.




BLADE WARRIOR™
The beast was present in the land and from tower to tower the sorcerers voice called upon him. As night encroached and set the sun to flight, so his legions made ready to conceal the tablets that would see daylight banished forever.
So, as the same last bloody light drained from east to west, the paladin came forth, ready to do battle against the legions of the night, using all his might and skill in this tale of swords and sorcery.
Screenshots from Amiga version
Atari ST, Amiga, IBM PC and compatibles.
BISLEY 89
Mirrorsoft Limited Irwin House 118 Southwark Street London SE1 OSW Telephone 01 928 1454
image works



50 goblins and a greedy snitch leap out of the scenery! What action now?

MIGHT & MAGIC II

US GOLD/NEW WORLD COMPUTING

£29.99 ■ Keyboard

Fantasy – the stuff dreams are made of. Another computer swords and sorcery role-playing game hits the Amiga scene.

The world of CRON (yes, CRON) is now all of 900 years old. For the first few centuries, elemental beings of pure force warred over it. The earth elementals managed to subvert the fire, air and water elementals.

200 years before the game starts, human spell-casters – under the supreme command of king Kalohn, Number One mage – managed to split the elementals up and herd them into their own seperate reservations.

Prior to the start of the game, the second greatest magic user in history, Corak, has been behaving peculiarly. He holds mystic summonings and travels magically. Now, he warns of an evil escaped criminal from the past who is loose again to hatch plots and gain domination over all. Will you take up the cause and defeat this adversary? All of this background information is contained in a few pages of well-written, imaginative scene-setting.

The game itself is more familiar in outline. You control a party of adventurers, individuals who are generated as novices. They can progress in their chosen areas of skill: chivalric Knight, dextrous Robber, saintly Paladin, holy Cleric, stealthy Ninja, tough Barbarian, sureshot Archer or potent Sorceror.

Only six characters may be used at one time. These can be chopped and changed from a roster of 26. To take pressure off the merry band, other people can be hired. Such hirelings must be paid off each day, or else they disappear back to the smoky inn where they last stayed.

A simple 3D window displays the direction in which your characters face. They move forwards, backwards and turn to each side. Hundreds of different creatures exist. Some of them can aid you: a blacksmith from whom you buy equipment, a priest who heals characters. Other creatures tend to be unfriendly, hacking your party up unless you can beat them to the draw.

CRON is big. Starting at the town of Middlegate, you can explore the kingdom and the four elemental zones. The latter areas are accessible when you can gain protection from certain spells. Forests and mountain ranges block your way, but these can be braved if some members of your party are talented in relevant ways. Time travel is possible, but it will be a while before new characters achieve this.

The spell system is a little clumsy, the combat one-sided (terminal to your enjoyment) until you can build up the party's expertise. It's an enjoyable caper that people who appreciate the likes of the *Bards Tale* series will get into.

Pat McDonald



The blacksmith will sell you a variety of items – but at what price?

GRAPHICS AND SOUND

No graphics are used to convey what your characters are like. Everything to do with them is text. The creatures of CRON are animated with a few frames, and the background landscapes are pleasing to the eye. Sound exploitation is almost non-existent. There are a few spot effects to be heard, but they are not exactly striking.



Design a hero using a few dice and a little luck.

LASTING INTEREST

New characters are woefully weak. Six experienced characters are available whenever you want, and combat is usually fatal if you don't use them for your first forays. Later on you can play with more confidence. In terms of depth, atmosphere and size, *MMII* is a compelling game that needs effort to get started. Be warned, fantasy fans!

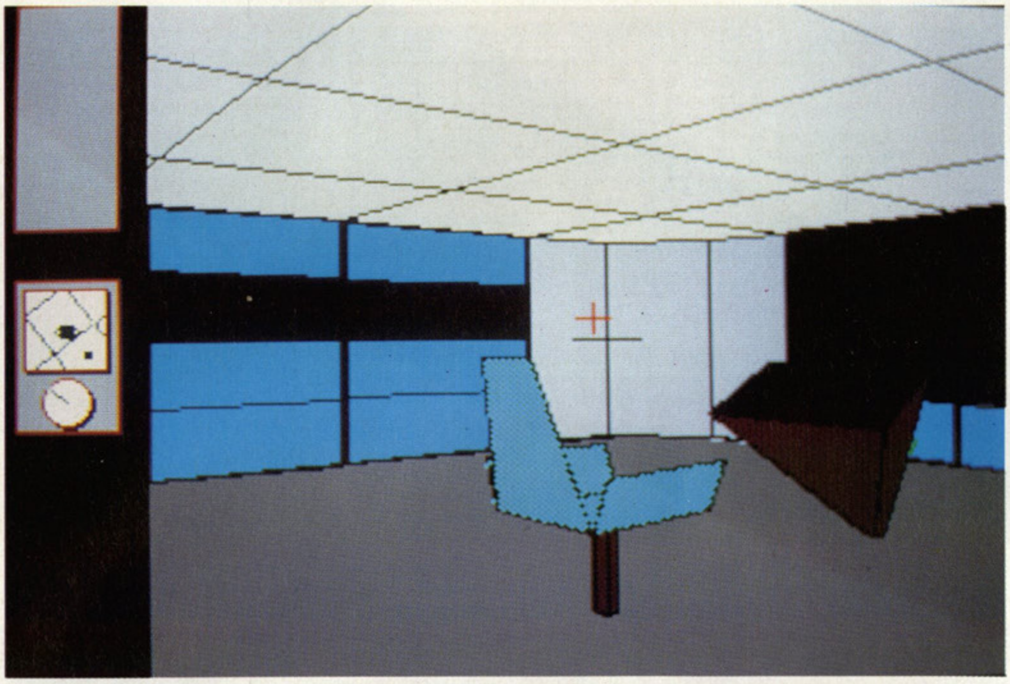


Nasty sludge beasts lurk under the town of Middlegate.

JUDGEMENT

The game lacks a lot in the way of appeal. The graphics look good, but the different options are confusing at first. The manual is written with this in mind, and manages to guide you gradually. Once sussed, no worries: but the initial frustration may prove too much for many people. Such fast-reaction game-players will see it as too tough and dull: hardened adventurers will rise to the challenge.

GRAPHICS	7
SOUND	4
INTELLECT	9
ADDICTION	7
OVERALL	73%



The command centre, complete with James T Kirk-type chair.

THE COLONY

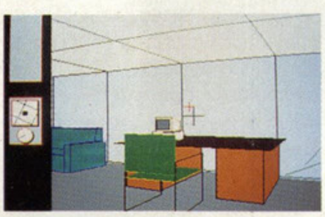
MINDSCAPE £29.99 ■ Mouse

The Regional Space Marshal was flying his DAS Cruiser through Delta Space when a message came through on the subspace radio. "This is Commander Bagdasarian of space frontier colony Delta 5-5. We have been overrun. I repeat, we have been overru...." The message was lost in a wash of static interference.

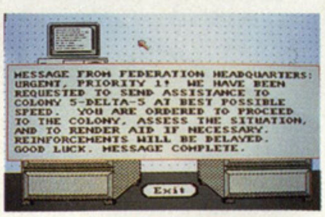
Thus begins your adventure as lone Space Marshal in an attempt to rescue the colonists on Delta 5-5 and stop the spread of the alien threat. Now where have we heard that before...?

The Colony takes place in a 3D environment, combining solid polygon graphics for the internal views and wire-frame representations of the outside world. The game starts with you in the main control room of the DAS Cruiser, having just awoken from a crash landing. All non-essential power systems have shut down, leaving the ship in darkness. After restoring power to the lighting systems you begin the quest to liberate the planet and make your escape.

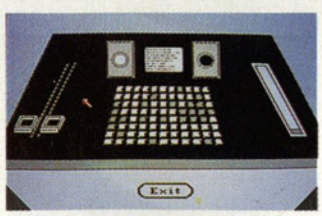
The ship's drive systems have been damaged, so as well as destroying the alien forces you must recover special equipment from the base to repair the cruiser. You must use any systems you can find to gain access to further sections of the game, finding the codes to use on the right equipment and kitting yourself out with enough weapons to survive the alien threat. ***Maff Evans***



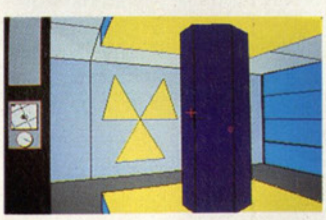
Move up to the desk so that you can investigate further...



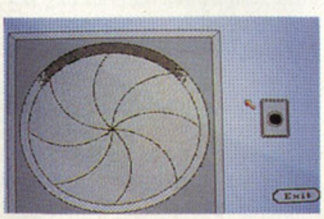
...and a message is displayed.



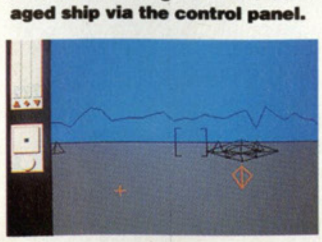
Switch on the lights in the damaged ship via the control panel.



The damaged ship's reactor. You'd better repair it or you'll never make it home.



The airlock's closed, so a code will be needed to grant you access to the surface.



No sooner does our hero set foot outside the ship than he's under attack from alien beings.

GRAPHICS AND SOUND

Influences as varied as *Star Trek* and *Battlezone* can be seen throughout the game, the latter particularly in evidence in the surface sections. The graphics are so similar to the arcade tank classic that it could almost be the same game! However, despite the use of filled 3D graphics, the game has a very sparse appearance. The update is extremely slow, making turning a simple corner a slow and sometimes disorientating procedure. The sound is extremely disappointing, consisting of a few beeps and crunches instead of the state-of-the-art effects we all know the Amiga can supply.

LASTING INTEREST

As with most games of this type the plot is long and involved, but instead of using different elements in key locations it becomes a case of finding something in a drawer and trying it where nothing else works. All the puzzles are overly simple, relying more on luck than judgement as to whether they can be carried out. The only real problem is the excruciatingly difficult battle scenes. There is no time to find your feet with this game – it's straight in at the deep end. Death occurs time after time after only a minute on the planet's surface, a point that will discourage even the most ardent arcade adventure fans. A player can only take so much before disks start to be hurled across the room.

JUDGEMENT

As we've said before, *Aliens*-inspired 3D adventures are popping up everywhere these days so to be successful a game either has to have involving gameplay or incredible atmosphere. Unfortunately, *The Colony* is lacking in both these elements. The graphics are sketchy and unrealistic and the gameplay is repetetive and frustrating. If you are lucky enough to get into the complex you may find yourself playing for a couple of days. On the other hand, if you repeatedly fall foul of the surface guards after scores of attempts, the game just might lose its appeal.

GRAPHICS	4
SOUND	2
INTELLECT	6
ADDICTION	3
OVERALL	51%


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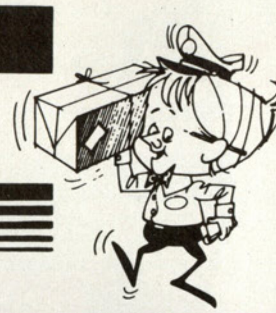
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The plane selection screen. For the next mission let's get inside one of those He 111s.



The in-flight map, which tells you what's around and what you should be bombing.

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You can keep your Retaliators and keep your supersonic high altitude bombers. What you really want are good ol' Spitfires and Messerschmitts to go dog-fighting in – or so Lucasfilm will have us believe in their follow up to the great *Battlehawks 1942*.

Anyone with even a basic knowledge of recent British history will recognise the immortal words used in the title, so it's no shock to find out that this game is a combat flight sim based on air-craft that were around in the first half of the Second World War.

First of all, you can decide which side to fight for, but remember the decision here limits which craft are available to fly – no Spitfires in the Luftwaffer! The Brits have got Hurricanes and Spits to fight in while the Germans have not only fighters, but medium and long range bombers and dive bombers. Each plane has several missions set aside for it that can be played in any order. The missions are varied and range from straight dogfights to scramble and intercept missions.

Once a mission is completed the combat records are updated (unless you altered some of the options before the battle to make life easier) and stored to disk. This way you can get together a list of pilots to select to fly with you on future missions, ie do particularly well on one mission and the computer can fly that pilot on another mission and will attempt to keep up the pilot's usual standard while you fly another plane and (hopefully) do just as well.

Then there are the campaign games if you feel like playing for a long while, where you take charge of your side's airforce and try to either bomb the blazes out of blighty or not, depending which side you're on. ***Andy Smith***

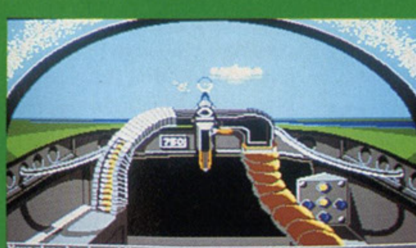
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The cockpit – a couple of Schweinhund Englisher pig dogs in Spitfires closing in.



Jump into the left gunner's position and try to fend them off.



More from behind – yahoo! That's one of the enemy successfully downed.

GRAPHICS AND SOUND

The sound effects are superb the droning engines, bullets and explosions are very atmospheric. The graphics are also good, but slow and there's a severe lack of ground detail (that doesn't detract from the action though).

LASTING INTEREST

There are heaps of missions, loads of planes and plenty to keep you busy. If you get bored flying a fighter try being a whole crew and not only flying a bomber, but acting as rear, side, forward, underneath, on top, inside-out, back-to-front, behind-the-bikesheds gunner and the man that presses the buttons and shouts 'bombs gone'. Once you've flown all the possible permutations there is even a mission builder to design your own – what more do you need?

JUDGEMENT

TFH is a great game, it captures the real dag-a-dag-a-dag-a flavour of WWII dogfighting *(How would you know – Ed)*. The 3D graphics may not be state-of-the-art but it's the gameplay that counts and there's plenty of that. If you want a combat flight sim and you don't want missiles but like to see the whites of the enemy's eyes, then this is what you're after.

GRAPHICS	8
SOUND	8
INTELLECT	5
ADDICTION	7
OVERALL	90%



Kill the spirits by throwing rocks!



No time to horse around!

CASTLE MASTER

DOMARK/INCENTIVE £24.99 ■ Mouse or Keyboard

Has any member of your family ever been snatched by a 30-metre dragon and carried off to a wizard's lair? Well, it's the kind of thing that used to happen all the time in the Dark Ages, or so Incentive would have us believe in this all-singing, all-dancing, cheese-eating, Freescape spectacular.

Freescape pioneered 3D adventuring way back in 1988, when *Driller* utilised solid geometric blocks to create an arena you could walk on, crawl under and touch. It was inevitable that Incentive would eventually turn to the usual adventure fare of castles, wizards and ghosts.

Legend (and the title sequence) has it that your twin's been nabbed by the aforementioned dragon and stashed in Castle Eternity. So you set out to conquer the fortress armed with your wits, courage and a handful of rocks with which to 'kill' any ghosts you meet on the way. This may not be the world's most desirable arsenal, but it will do.

The castle comprises four towers, each with three levels. Throw in a catacomb maze and a gate-house or two as well as sundry other essentials like a chapel and you've hours of frustrating entertainment guaranteed.

The first priority is staying alive – not as simple as it sounds. There are three things that any sussed knight should know. Eating plenty of cheese – huge wedges of Cheddar are everywhere – keeps you strong, falling in or off things is fatal and when you bump into something that goes bump in the night the ghoulies drain your strength quick.

The game is controlled either from the keyboard, or by mouse or joystick. Two sets of cursors (direction and aim) appear on screen together, which means your first few steps are faltering. The icon controls are fine for rapid strides or swings in one direction, but they lack the response for fine movement, so keys are the only option for close control. And you'll need it to walk tightrope-like catwalks – one slip and you're gone.

Naturally, it isn't feasible to burst in, grab your bro' or sis' and bug out – that would be too easy. First you have to find the right keys to open the right doors. A monumental task in itself, because the darned things aren't labelled. And there are more mysteries to solve en route, too, if your quest is to end in a reunion and not in a morgue. Strange 'pentacles' have to be collected, while literally littering the place are unmarked potions that do everything from restoring strength to granting you the nifty ability of 'stone travel'.

To find the treasure, pentacles and keys means you have to look at, in and under everthing. Well, almost everything – try performing a James Heriot on the back end of the horse and all you manage to get is an 'aaaaeeugghh!' message.

Trenton Webb

GRAPHICS AND SOUND

The Freescape is better than ever, with fast movement in a clear, sharp landscape: yet it's no stunner. To keep the Castle motif alive grey and blue dominate the colour scheme. The result is markedly less spectacular than the golds seen in *Total Eclipse*. There's a sense of 'been there, done that', because solid 3D ain't the technological marvel it once was, and all the cheese in the world can't change the fact.



Castle Eternity is littered with supposedly 'helpful' riddles.

LASTING INTEREST

***Castle Master* will quite simply have you running around for months. Castle Eternity is huge and crammed with enough apparently inaccessible rooms to provide a challenge to any true gamesplayer. The ability to play brother or sister adds longevity, as each has different abilities: there are places she can squeeze through, but he has to crawl or take a different route. Luckily a save game option minimises the intense hair-tearing associated with sudden death.**



There two secret rooms here, but where the devil are they?

JUDGEMENT

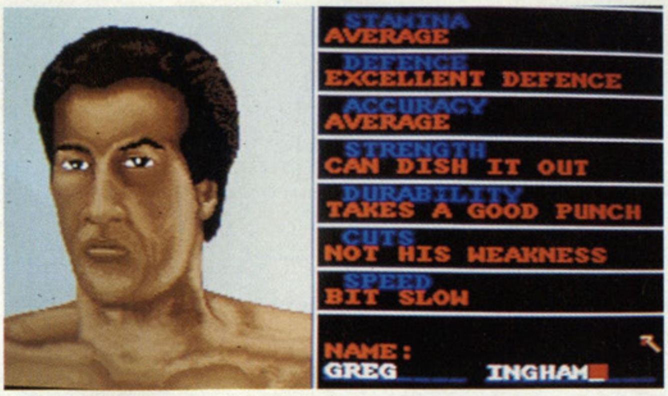
***Castle Master* deftly overcomes two major stumbling blocks. Firstly Incentive have managed to produce a new game and not settled for *Total Eclipse* in grey. Secondly they've survived the transition to the rather run-of-the-mill realm of dragons and dungeons by adding humour, riddles intricate conundrums.**

A huge, interlinked puzzle, *Castle Master* demands mental dexterity, lateral thinking, mapping abilities and fast reactions to survive. The game doesn't exactly sprint along, but so what? The slower pace offsets the lack of instant amazement with a lasting intrigue and a real hook.

GRAPHICS	9
SOUND	5
INTELLECT	8
ADDICTION	7
OVERALL	89%



---HAS BEEN TAKEN OVER BY THE EVIL REPTILONS!
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Bzzz. 'crackle'. hizz. pop: This is Radio S.M.O.G. bringing you the latest update.
THEY ARE BEING FORCED TO CREATE AN EVIL ROBOT ARMY DESTINED TO DESTROY EARTH!
"We join our heroes on the surface of Planet X where a rescue mission is in progress. The REPTILONS have enslaved the humans stationed there. They are being forced to create an evil Robot Army destined to DESTROY THE EARTH! Listen out for our next broadcast"
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Published by Domark Ltd, Ferry House, 51-57 Lacy Road, London SW15 1PR Tel: 01-780 2224 Atari ST & Amiga Screenshots



Pick the boxers you wish to join your camp.



The office you operate the stable of boxers from.

WORLD CHAMPIONSHIP BOXING MANAGER

GOLIATH GAMES £19.95 ■

Mouse

After the runaway success of *Tracksuit Manager,* which put the player in the boots of a football club boss, comes *Boxing Manager*. Same idea, new sport.

Your stable can cope with up to five boxers, so a day in the life of a manager starts in the office trying to fix up some fights for your boxers. There are two governing bodies in the game, the World Council of International Boxing and the Federation of World Boxing. All your boxers start off right at the bottom of the list of graded boxers and fights can only be arranged with boxers of a similar class.

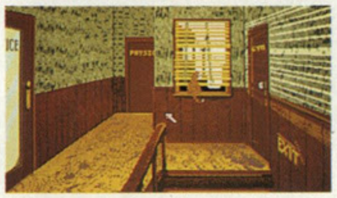
Things to consider when fixing up a fight include just how much of the gate money you're prepared to take and which governing body you want to supervise the fight (because they each class boxers differently). Once a fight is arranged the best thing to do is check on the boxer and decide which are his strengths and weaknesses, then advise the trainer on what the boxer should be concentrating on. You can also call a scout to spy on the opponent and report back on his strengths and weaknesses.

Then the big day arrives and you can watch your boy in action. Two commentators tell you what's happening during the 10-round bout and at the end of every round you play second, administering the cold iron to bruises and the sponge to the face.

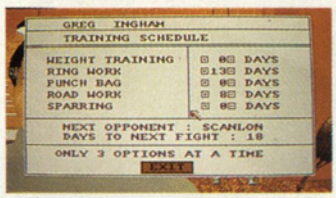
Pick your opponents well, keep your boxers happy and in tip-top condition and you may just produce a champion. ***Andy Smith***



Dial another manager and arrange a fight.



Then pop over to the friendly neighbourhood gym and...



...fix your boy a tough training schedule to go through.



The big night. Watch the commentary and alter your tactics between rounds accordingly.

GRAPHICS AND SOUND

The sound effects are fine – unnecessary, but fine (the cat in the hallway will get on your nerves sooner not later, though). The graphics are fine too, being rather well drawn. Looks and sounds better than you would expect for a management game.

LASTING INTEREST

It's not as deep as most football management games but it's still complex enough to keep you at it for a while.

JUDGEMENT

If you're a management game freak you may find it a little too shallow to have you up all night, but if you've never dipped your toes into the management scene this could be just the thing to get you hooked.

GRAPHICS	7
SOUND	5
INTELLECT	6
ADDICTION	7
OVERALL	76%

SAS COMBAT SIMULATOR

CODEMASTERS £4.99 ■

Joystick or Keyboard



Collect the large Codemasters symbol to gain some extra firepower.

No bombing embassies here – it's pure shoot-em-up in the *Commando* mould. You control the SAS chappie and have to bomb and blast your way through four stages of enemy territory. Each stage is made up of two sections: the first is the *Commando* bit where the action's viewed from above and the second section is more of a beat-em-up which is viewed from the side. Extra weapons such as rapid fire are collected when you run your man over symbols, and all extras are lost when you lose a life.

Tough, well put together but terribly dull. There are loads of better games of this genre about, but for less than a fiver it'll keep you playing for a while. *Andy Smith*

GRAPHICS 6 / SOUND 4 / INTELLECT 2 / ADDICTION 5 / OVERALL 44%

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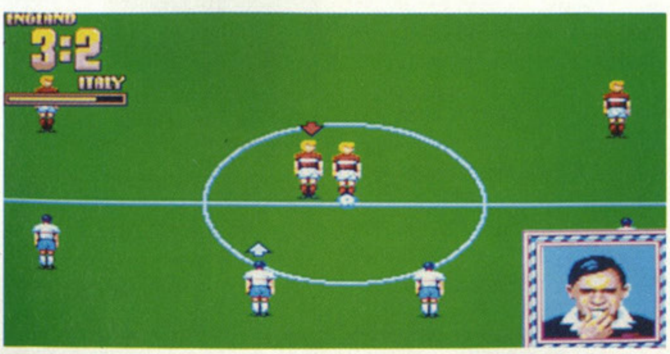
VIRGIN £19.99 ■ Joystick

Well, it only happens once every four years and it's such a big event that software houses can be forgiven for inundating us with games attempting to cash in. What is it? Why, the World Cup of course.

Already there are half a dozen games with Italia, World Cup, and anything else that sounds vaguely connected to the event, in the title – in the hope that football fever will sweep the country and everyone at all interested in the event will rush out and buy a game based on it. There's only one game with the official World Cup license though – this one (but then again there are licences for other stuff like the England team, Adidas and probably the laundrette that washes the kit.)

It's a one or two player game in which you have to play through a qualifying match and then the quarter finals, semis and eventually the final. The game uses the familiar viewed from almost above perspective and it's played like most other footy games except for one important difference. Normally the footballer the player controls is highlighted (it is here too) and control switches automatically to the player nearest the ball. That doesn't happen here, instead the player has to hit the firebutton to switch players and once a player is selected, if he's near enough, another press of the fire button will cause him to either kick the ball if he's in possession or attempt a tackle if he isn't.

The perspective changes once an attacker from either side is in the opposition's box, to a view from behind the player if attacking or behind the goalie if the other team are attacking. Suppose you're attacking you then usually have one shot to beat the goalie. When defending and controlling the goalie you then have to try to save the oppositions shot, which usually involves making a dramatic diving save. Play through the matches, and after a few attempts you may just be lucky enough to walk off with the cup. ***Andy Smith***



The teams make ready for a kick off after a goal has been scored.

GRAPHICS AND SOUND

There are some great pieces of digitised speech and crowd noises, but the rest are simple thuds of foot against ball. The graphics are great too especially from behind the goal mouth. The animation's not as hot as it might be because it's a bit jerky but not to the extent that it does any harm to the gameplay.



The view from behind your goalie (note the flat cap!).

LASTING INTEREST

It's tricky to get to grips with and the computer controlled teams are no pushover, so the game is going to keep you playing for a while. However, it's got much more lasting interest in two player mode though.



Already one goal up, and England are storming (!) towards the end of pitch guardian (goalie to you and me).

JUDGEMENT

One of the better footy games around at the moment. The gameplay lets itself down by not having automatic switching of players but that doesn't take too long to get used to. It's only in the second division compared to *Kick Off* but it's the best of the crop, so far, that are based around the World Cup.



A triumphant England team make it through another round (bet they get knocked out in the next one).

GRAPHICS	7
SOUND	6
INTELLECT	3
ADDICTION	7
OVERALL	74%



You've found your first hostage, all you have to do is run into him to perform the rescue. That switch on the right operates the escalator to the next level.

ESCAPE FROM THE PLANET OF THE ROBOT MONSTERS

DOMARK/TENGEN £19.99 ■ Joystick

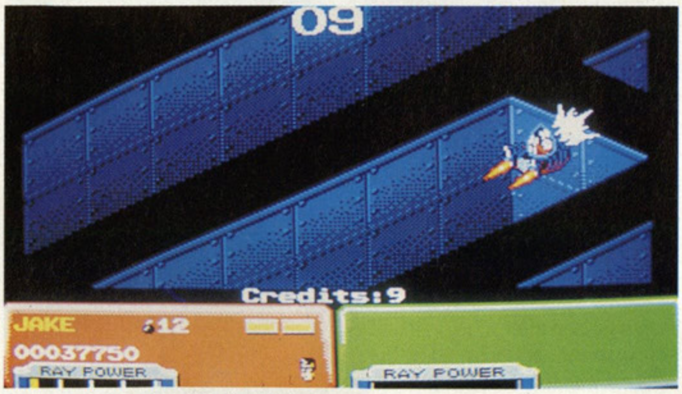
Planet X was doing fine, thank you very much, until the Reptilons arrived. This evil race are set on destroying Earth so they've captured professor Sarah Bellum and have enslaved all planet X's inhabitants and are forcing them to build an army of robot zombies. You, Jake, and your buddy Duke are going to rescue the hostages and save Sarah (and the day).

Armed with a ray gun and a fistful of bombs you have to work through the planet destroying the robots and their equipment and rescuing the hostages as you go. The planet is made up of several sections, each section divided into three or four levels. Getting from one level to the next usually involves finding and switching on the escalator or climbing up the conveniently placed ladders.

Rescuing the hostages is simple enough you just have to walk into them and they are then beamed aboard the orbiting shuttle (every shuttle load earns you some extra energy as well as points). Sometimes however the hostages are entombed in glass cases that have to be de-activated before the hapless human can be saved. Fighting off the incoming enemy robots and Reptilons is a very different matter though.

On every section of every level you'll find progress hindered by all manner of weird and wonderful robots that fire and bash into you causing a dramatic loss of energy and eventually life. Destroying them involves blasting them with the ray gun. Some robots take more than one hit to be killed, but you can increase the power of the ray gun by picking up green crystals left behind when certain robots are killed. It's possible to regain energy by shooting open cabinets which sometimes contain food (sometimes extra bombs). Then there are the traps. Often a level will also contain traps like spikes that thrust out from the wall or floor tiles that electrocute, most of these can be passed with careful timing.

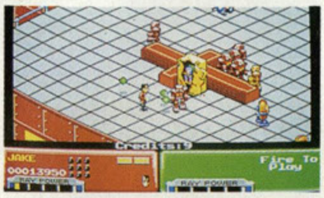
Clean out a level and you then have to jump into a small spaceship and negotiate your way through a bonus maze level before confronting an end of level guardian. ***Andy Smith***



The bonus level and boink! Wrong way!

GRAPHICS AND SOUND

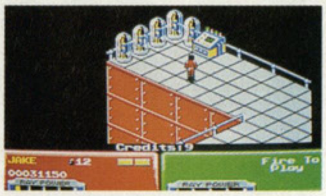
The pumping music that plays throughout is great and so are the sound effects, even better though are the isometric 3D graphics. Everything is well drawn, well animated and there's a touch of humour in there too – just watch as your man clings on for dear life when you walk him accidentally off the side of a level. An excellent conversion.



There's energy giving food in the locker and those green crystals increase the power of your gun.

LASTING INTEREST

In one player mode you get half a million credits – well a lot anyway – so it's easy to get well into the game. In two player mode you can get even further, so it may not take too long to complete it – especially if you can survive past the end of level guardians who can be really tough. You will have a lot of fun getting there though.



Shoot the console to de-activate the glass cages.

JUDGEMENT

It's entertaining, it's great fun, it's a great conversion and it's very playable. It does get repetitive after a while but play with a friend and you will have more than a couple of laughs. Certainly one of the more enjoyable coin-op conversions around at the moment.



The first end of level Reptilon – handsome chap isn't he?

GRAPHICS	8
SOUND	8
INTELLECT	4
ADDICTION	7
OVERALL	82%

POWER COMPUTING

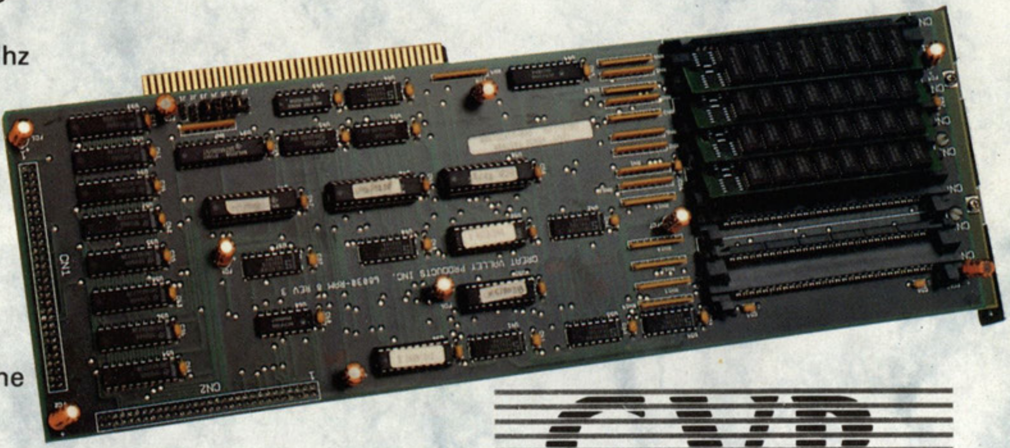
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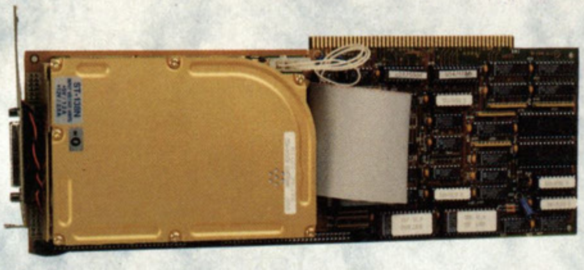
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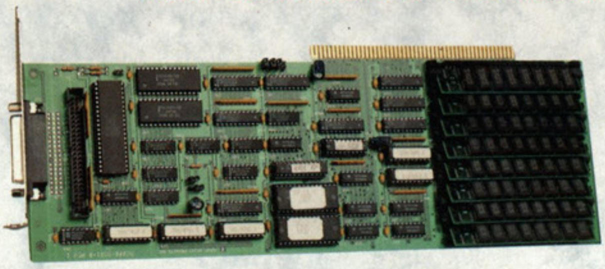
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THE DIY Amiga

With just a trusty screwdriver and Checkmate's Amiga A1500 kit, you can turn an Amiga 500 into a 2000. JASON HOLBORN gave it a try...

Let's face it, we would all like an Amiga 2000, but very few can actually afford such a dream machine. Although the heart of an Amiga 2000 is virtually identical to that of the A500, the two things that really set the Amiga 2000 apart from its little brother (*or sister – Ed*) is its expansion potential and good looks (ok, so that's debatable!). Even if you buy just a basic unexpanded 2000, you'll have a computer that looks mean and powerful.

The basic A500 was never really designed as a machine to be expanded to the kind of levels possible with its workhorse companion, the 2000 – just a single edge connector and a space for a RAM expansion will allow a minimal amount of expansion. While this is more than enough for most of us, try to take the A500 any further and you'll start to run into problems. As for looks, well need I say more? The Amiga A500 won't win any beauty competitions.

500 + 2000 = 1500?

In the short time since its initial announcement, Checkmate's Amiga A1500 kit has caused something of a stir amongst Amiga A500 owners. At Amiga Format we have been inundated by enquiries concerning the fabled A1500, a rather neat DIY case conversion kit that promises to take the expansion capabilities of your Amiga A500 up to and beyond that of an Amiga B2000. Not only that, but your A500 will get kitted out in the very latest designer look casing (*an Italian sytlist perhaps? – Ed*) – complete with slimline system unit and detachable keyboard.

The basic A1500 kit comprises of a set of two steel casings to hold the Amiga 500 PSU and keyboard. Even before assembling your A1500, the first thing you will notice is the shear ruggedness of the whole affair – this thing really is tough (it even managed to withstand the not unsubstantial weight of myself standing on top of the A1500 system unit! – see picture elsewhere on this page for proof). Both the keyboard and PSU casings are handmade from Zintec steel and sprayed in a hard wearing shade of cream.

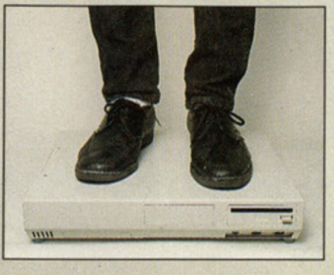
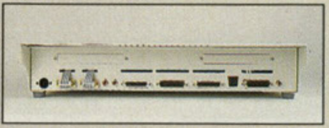
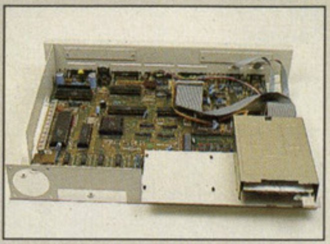
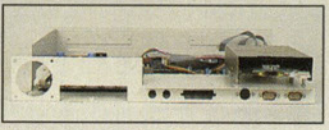
Before worrying about the expansion capabilities on offer, the immediate advantages of the A1500 are obvious. Firstly, the Amiga's internal disk drive is brought around from its present (and awkward) position to face the front (where disk drives should always be!) – just think, no more fiddling around the side of your machine in an attempt to find the disk slot. For gamers, the position of the joystick and mouse ports will make life considerably easier as they now live at the front of the machine (a la 2000). If you've got a second drive or a 3.5 inch hard drive such as Commodore's A590, the A1500 includes space to mount the drive and its controller internally.

The A500 keyboard now lives in its own casing which is connected to the PSU via a curly cable. To avoid having to carry out modifications to the existing keyboard hardware, both the drive and powerlights have also been brought across to the keyboard case. It would have been nice if these had been moved to the system unit, but that would have required you having to get out the old soldering iron (how lucky do you feel?).

Conclusion

There are primarily two factors to consider when trying to make up your mind to buy the A1500. If your only reason for buying the A1500 is to make your A500 look pretty, then you'll be spending an awful lot of money for something that will be treated as nothing more than a new box. However, if you're serious about your Amiga and intend to expand its capabilities (and have perhaps considered upgrading to a 2000), then the A1500 will allow you to do things with your A500 that Commodore never thought possible.

A1500
£(See PRICES Box) ■ A500 only
■ Checkmate Digital
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The A1500 inside and out. Note how the rugged construction wil support even Jason's weight!



CONSTRUCTION

Turning your Amiga 500 into an A1500 is simple and shouldn't take longer than half an hour. All you have to do is to open up your A500 (note that this will invalidate any warranty left), remove the PSU, keyboard and disk drive from the A500 and move them into the A1500 kits. For those who break into a cold sweat at the thought of such things, you will be glad to know that no soldering is required – just a screwdriver.

The A1500 comes with both printed instructions and a special animated tutorial that will show you on screen how to put it together. If you do feel unsure about doing the conversion, Checkmate will carry out the task for you for a small fee.



PRICES

The A1500 kit is available in a whole range of different specifications to suit your individual needs. Below is a price list of the options available. Phone Checkmate for more info.

A1500 Base Unit	£230
OverRider Box	£250
A1500 + OverRider	£450
Rackmount A1500 + Internal MIDI Interface	£300
Rackmount Conversion Kit	£30

EXPANSION

The base A1500 unit has provision for a single expansion slot which can either be a 100 pin 2000 slot, an 86 pin A500 connector or a 2000 processor slot. Although not fitted as standard, an Amiga 2000 video slot can also be fitted (this will have to be done by Checkmate as it requires a fair bit of soldering to be carried out), therefore allowing your Amiga to take advantage of such wondrous devices as Microway's *Flicker Fixer* and NewTek's forthcoming *Video Toaster* card.

The fun really starts with the addition of the A1500 *Over Rider* box, which is a card cage which fits snuggly on top of the A1500. The *Over Rider* provides a further 3 expansion slots which can be configured to your individual specification consisting of any combination of the three expansion slots mentioned above. Up to three of these little beauties can be added to take the expansion capabilities of your A500 way above that of a standard 2000. Although both the A1500 unit and the *Over Rider* will happily handle the PC Bridgeboard cards, neither feature PC slots therefore rendering the Bridgeboard practically unusable. To quote Steve Jones of Checkmate "If you need to run PC software, go and buy a PC – it's cheaper than a Bridgeboard!"

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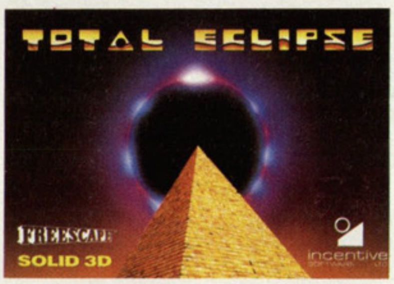
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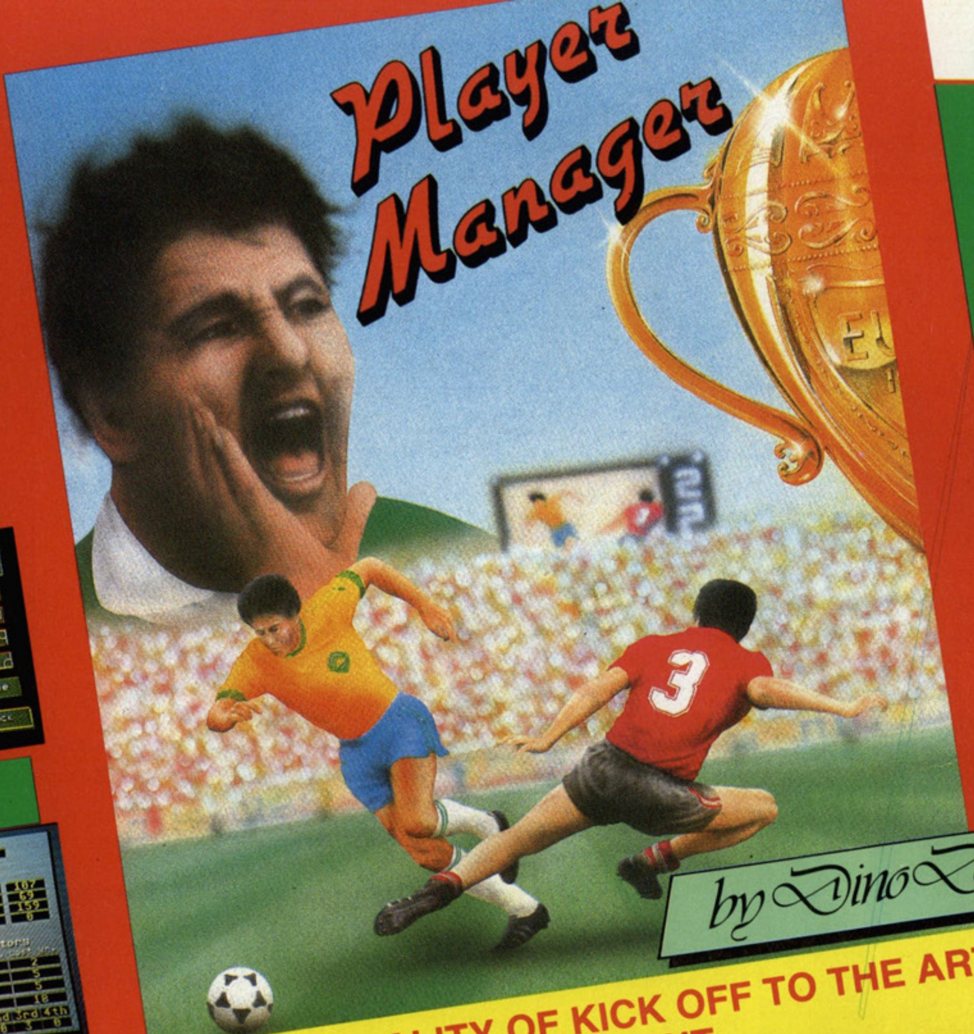
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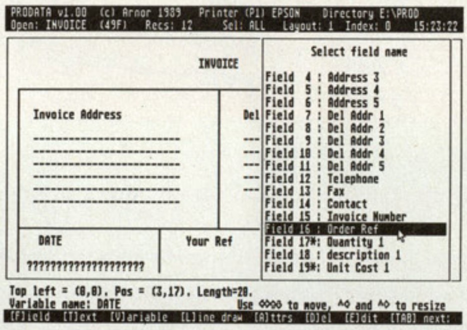
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Music FOR THE MASSES

Everyone knows that making music can be an expensive affair, but **JASON HOLBORN** proves you don't need to take out a second mortgage before you can make beautiful music.



You may not know it, but your Amiga is something pretty special when it comes to music making. Indeed, only a few years back the sound capabilities of the Amiga could match even the most professional musical device. With high quality sampling capabilities and four-note polyphony, who needs expensive samplers and synthesisers when your Amiga can do the work for you? You've got the hardware, all you need now is the right software...

Any of you who keep an eye on the Atari ST marketplace will immediately recognise the name of *Quartet*. Since its release late last year ST *Quartet* has been doing very nicely, thank you, and now Amiga owners too can find out what makes the program so special. Although Amiga *Quartet* is very much different from the ST original (do you really want just another ST port?), it offers many functions that are sure to appeal to Amiga musicians of all levels of ability.

Introducing Quartet

So what is *Quartet*? Basically speaking, *Quartet* is a music composition tool that uses digitised sounds as instruments. Although the program includes MIDI support, the emphasis is firmly on the Amiga's sound capabilities. Because of this, it has many different uses. Most immediate of these is simply the creation of music for the fun of it, but *Quartet* has another use which Microdeal are keen to stress.

The *Quartet* distribution disk includes assembler source code (in both Seka and Devpac format!) for a player module which will allow you to incorporate *Quartet* tunes within your own programs – *Sound Tracker*, look out! Even if you're not a programmer, *Quartet* includes a freely-distributable player program that will let you create your own demo. Also, because *Quartet* can be told to start playing from an external MIDI sequencer, there is no reason why the program couldn't be used within a professional music environment. More on all of this serious stuff later!

Close To The Edit

Although from first impressions the composition screen of *Quartet* looks very similar to a conventional scoring program, the program is more a culmination of a *Sound Tracker*-like editing system in combination with score-like presentation.

The main *Quartet* editing screen consists of four of these grids that represent the four sound channels of the Amiga. Placing a note is simple. Just select the sampled instrument you require by clicking on the appropriate bank/voice number and then point and click anywhere on one of the four staves (grids). Instead of displaying the note in the conventional manner (crotchets, quavers etc), *Quartet* displays the note as a two-figure number. The first figure represents the sample bank number and the second the voice number. Obviously, due to restictions within the Amiga sound hardware, each channel can only play one single note at any one time.

Notes can also be input in real time from a MIDI keyboard, which can be a real time saver for those of you who are lucky enough to own such a device. This is perhaps one of the major advantages that *Quartet* offers over similar internally-biased systems such as *Sound Tracker*.

ABOVE: The main editing screen is very similar to a conventional music score.



ABOVE: Dan Lennard – the man responsible for *Quartet*.

Once you've entered your piece of music, *Quartet* includes various tools to help you manipulate it. Once it has been selected, any section of music can be cut, copied, or pasted and even transposed.

Sample City

For those of you without sample editors, *Quartet* incorporates a simple sample-editing screen which allows you to fine-tune any sample held within the four sample banks. From within this screen you can alter the start and stop positions of the sample, remove marked areas from within

PUMP UP THE Volume

A new way of making the most of your Amiga's audio powers is checked out by MAFF EVANS.

Everyone out there knows how good the Amiga's sound capabilities are. What with arcade games, samplers and music packages appearing on the scene stretching the Amiga's audio powers to the limit, things are looking rosy. But why oh why doesn't it sound wonderful all the time?

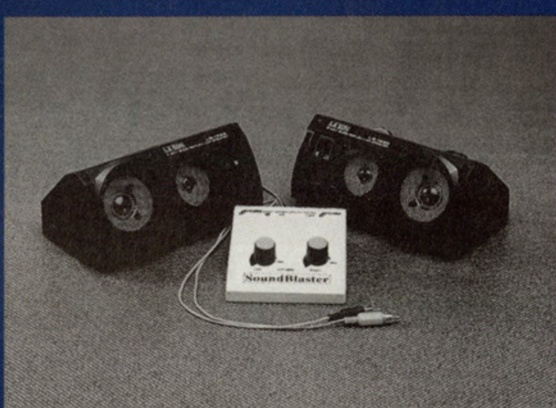
Well, to produce hi-fi quality sound from your machine you're going to need more than the little speakers stuck inside the monitor. There's always the hi-fi, but unless you've got the right sort of connectors on your stereo and the necessary electrical knowledge you're a bit stuck. So do you have to chuck all your hi-fi gear and buy a new system? No, nothing so extreme – thanks to Sound Blaster.

Sound Blaster is a small amplifier that plugs into the audio ports of the Amiga. The system is powered by a small 9-volt mains adaptor of the type usually found running an electronic game, and pumps the sound out through a pair of car speakers which are included in the package.

So how well does it perform? Very well is the answer. The sound is certainly loud and clear, and the volume can be adjusted by a pair of pots on the front of the unit. It would have been nice to have a master volume control, but there you go!

For forty-five quid the package represents reasonable value, and proves a preferable alternative to tinny TV speakers! ■

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The twin speakers and amplifier unit of Sound Blaster.



ABOVE: In common with the rest of *Quartet*, the File Handling screen is particularly well-hung in the presentation department.

a sample (the program then automatically join up the two ends) and turn automatic looping either on or off (therefore allowing you to loop sampled rhythms). Better still, though, *Quartet* really starts to shine when used in conjunction with a sampler. The program directly supports sampling from any *AMAS*-compatible sampler (*Master Sound* etc), therefore allowing you to grab samples and use them directly within your scores – just think, no more having to mess around within sample editors (although in practise, a sample editor such as *AudioMaster II* may turn out to be a neccessity).



ABOVE: Altering the amount of memory allocated to each sample.

BELOW: Clicking on the SET icon for a list of current loaded samples.



Conclusion

It's nice to see a program that not only looks really good, but performs equally well. Although it most certainly isn't the 'be all and end all' of sample sequencers, it is sure to do well among both home and professional users due to its power and relative ease of use. If you don't have access to racks of MIDI equipment, *Quartet* will let you compose high-quality music with ease – truly a case of delivering music-making power to the elbows of the masses! ■

QUARTET
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ABOVE: The Sample Editor allows fine-tuning of any samples that you use. You can define loop points, set the start and stop point, zoom in and out and even cut out individual sections.

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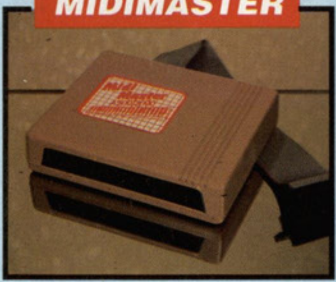
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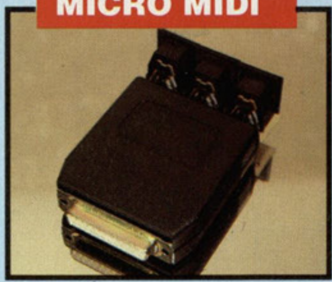
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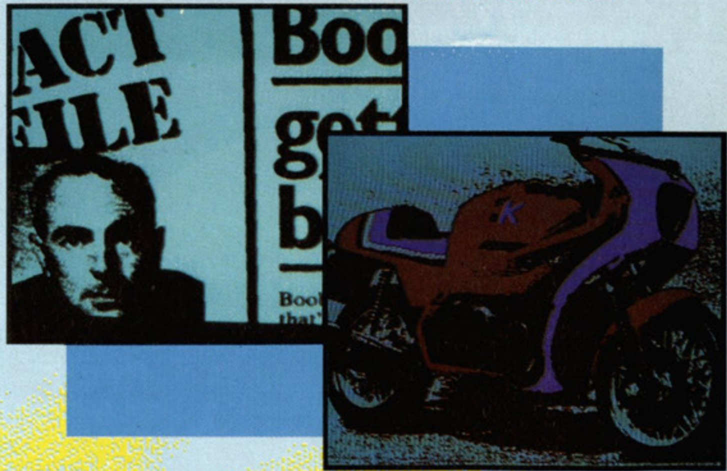


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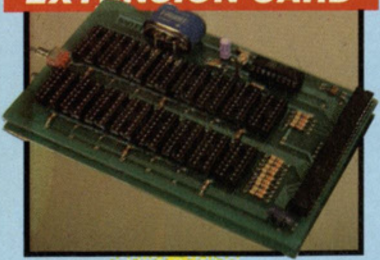
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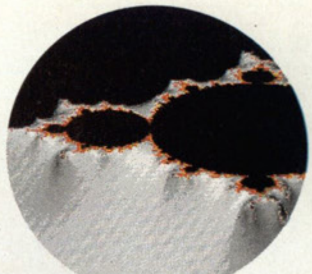
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pd UPDATE

RICHARD MONTEIRO takes a particular interest in Fish while swimming through the amazing underwater world of PD...

MANDELMOUNTAINS ■ Fish 295

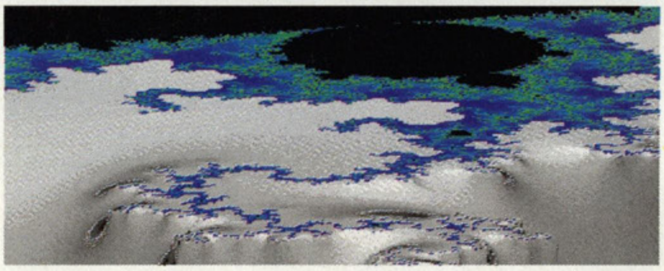
Discover the Mandelbrot set from a completely different point of view! *MandelMountains* gives you the ability to render wonderful 3D images of the Mandelbrot Set. The static colour strips of the usual Mandelbrot images can instantly be transformed into stunning mountainsides that climb smoothly to high plateaus or descend to deep valleys.

You may already have seen images of this type on the covers of books like *The Beauty of Fractals* by Peitgen and Richter, or *Science of Fractal Images* by Peitgen and Saupe. *MandelMountains* is a tool that allows you to create and recreate such images on your Amiga.

MandelMountains lets you produce high-quality non-interlaced, interlaced or even overscanned images of arbitrary areas of the Mandelbrot Set. You can easily define magnification windows through which to zoom deeper and deeper into this fascinating, ever more complex world.

Images are rendered from front to back. A virtual horizon prevents hidden areas from being displayed. The brightness of the surface is determined by the angle at which light falls on it. If the number of iterations exceeds a certain user-definable value, the pixel is coloured rather than left grey.

There are three image sizes to choose from: small for quick tests, normal for usual screen size (320 by 200 NTSC or 320 by 256 PAL) and full for overscan format (352 by 240 or 352 by 282). All images are generated in 32-colour mode: 16 colours are given over to the grey tones and 16 colours allow for the surface colours.

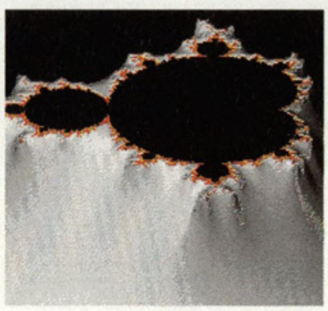


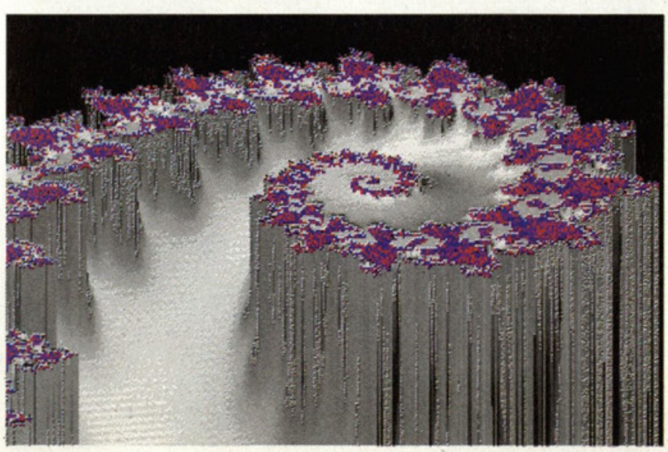
See the Mandelbrot set in 3D with Mathias Ortmann's astonishing fractal generator.

MandelMountains writes as output standard IFF files with an additional chunk which stores image parameters. Thus you can load previously generated images and make further magnifications.

Mathias Ortmann from West Germany has to be congratulated for such a superb program. The results are superb. Judge for yourself: the images dotted around this page show what's possible.







FISH 300 GTS

What a milestone: Fish Disk 300! Here's what's hot:

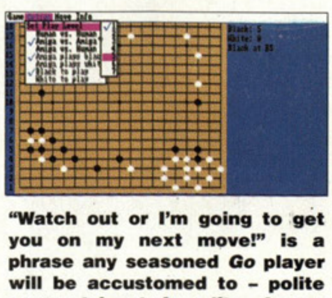
SUPERECHO – A neat program that requires a *Perfect Sound*-compatible audio digitisers. It generates live audio effects, including deep voice, squeaky voice, chorus, M-M-Max Headroom and much more besides.

TACL – An adventure player for games written with the Adventure Construction Language (a commercial computer language). Includes two sample games: one is text-only while the other mixes text and graphics.

TITLEGEN – A simple script language program for generating vertically-crawling title sequences in any font and up to 500 lines in length. Good for video production.

XENOZAP – You've heard of *Xeno* – the virus that attaches itself to executable files. Well here's the cure. *XenoZap* recursively descends into directories and disables the vicious *Xeno* virus in all executable files that it finds.

AMIGO Fish 289



"Watch out or I'm going to get you on my next move!" is a phrase any seasoned *Go* player will be accustomed to – polite ones, at least. Impolite players will simply say "Atari!"

A version of the classic *Go* game from which, it is claimed, comes

Demos CORNER



Want to see what your Amiga can really do? This is the place to find the latest demos in the PD scene.

INTROS DISK 32
17Bit Disk 612

The 17Bit Intros disks are coming thick and fast. And the quality just gets better and better. The latest addition comprises seven mini-demos from well-known teams:

VISION – A huge Vision logo scrolls horizontally from left and right while a nifty tune plays in the background. Nice, but nothing innovative.

DPS 2010 – Wow! This is really something special. Along with the obligatory large logo and scrolling message, an excellent tune accompanies the most spectacular pixel fireworks display you've ever on an Amiga. Spirals, explosions, swirls, messages, wipes – the lot. And all created out of dancing pixels. You've got to see it to believe it.

EXODUS – Zany tune, 3D vector graphics, BOBs (blitter objects), scrolling messages, copper lists... everything has been thrown into this demo.

FACTOR 4 – Hmmm, a little naughty this one. No, it's not what you're thinking! The title of the demo might help: *Onslaught*. Still stuck? Remember the game...? some of the characters have been stolen from the game and jive to the music. Neat.

NO LIMITS – It's called La Liner. It really ought to be called dreadful. While some of the patterns produced are clever, the sound and scrolling message are atrocious – jerky and monotonous. That applies to both. Oh, and very amusing: La Liner can be run in Commodore 64 graphics mode.

POWERLORDS – *X-Copy 3* looks like a disk copier of sorts to start with, but soon turns into a manic demo with pacmen, smiley faces and countless messages jumping and jiving all over the place.

INTROSPECTIVE – BOBs and some bouncing scrolling messages. Well, how novel!

PREDATORS MEGADEMO
Ray Burt-Frost
Disks 472a/b

Aussie user group the Predators have put together a two-disk compilation of demos. The result is fantastic. There are 11 parts to the megademo, all highly impressive. Along with dancing BOBs, rapidly-moving solid 3D vector graphics, starfields, parallax scroll fields and other similar demos, there are two games. The first of the games is a *Light Cycles*-style affair. Up to three people can play with a fourth computer opponent. The second game is for two players; the idea is simply to shoot your adversary before he gets you. Prepare yourself for audio visual overload. This demo is incredible: *and* it offers interaction.

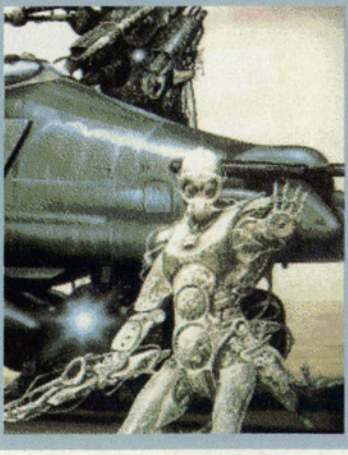
INTROS DISK 33
17Bit Disk 614

Amazingly, 17Bit have squeezed 10 demos onto one disk. Even though there's quantity, quality certainly hasn't suffered. If anything, Intros 33 is the most impressive compilation so far. Animate's solid 3D demo is phenomenally fast, Disknet have produced a convincing shimmering effect, the largest scrolling message ever appears courtesy of the ImageMakers, and somehow the Powerlords have managed to make Smarties look drab.

DIGGY PIGGYS
17Bit Disks 622/623

Channel 42 and the Silents have clubbed together to produce an astounding 35-picture slideshow over two disks. All the images feature digitised stills from fantasy art books. Incredibly, the pictures are composed of just 32 colours. Let the pixels do the talking...







the... ahem... word Atari. While it's not possible to load or save a game, there are plenty of other options available. For instance, you can play a human opponent or the computer, or the computer can play against itself. If you're new to *Go*, steer clear – there are no playing instructions provided.

CLOCKDJ
Fish 293

This utility combines a clock, mouse accelerator, screen blanker, window manipulator, function key editor and macro definer. This is version 4.07 of *ClockDJ* and fixes the screen flipping and mouse button bugs present in release 4.06.

BOOTBLOCK CHAMPION 3
Fish 298

There are a lot of viruses available for the Amiga: just take a look at the *Virus-X* documentation on last month's Coverdisk. Almost all have one destination: the boot block. Generally you can use Install to kill viruses. Some games – such as *Licence to Kill, Archon* and *International Soccer* – use a customised boot block. If a virus writes itself to the boot block in this case, the game will be lost forever. It doesn't have to be this way, though. With *Champion* you can save the bootblock of any disk to a file and, should the bootblock become corrupt for some reason, write it back when necessary.



You can check that nothing nasty lurks on a disk's bootblock with *Bootblock Champion 3.*

FMSDISK
Fish 294

Here's a handy number for hard disk users. *FmsDisk* is a file-based trackdisk simulator which is useful for creating a floppy-like partition on your hard disk. Essentially, you can copy the complete contents of the partition to floppy using diskcopy rather than filecopy.

DISKTALK
Fish 302

A cute, moist, fluffy little program which plays digitised sound samples of your choice when you insert or remove a disk.

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FISH 311 GTS

CROBOTS – A game based on computer programming. Unlike arcade games which require human input controlling some object, strategy in *CRobots* is condensed into a C language program written and designed by you. In this way you control a robot whose mission is to seek out, track, and destroy other robots also running programs. All robots are equally equipped, and up to four people may compete at once. Of course, you will need a working knowledge of C to get anywhere.

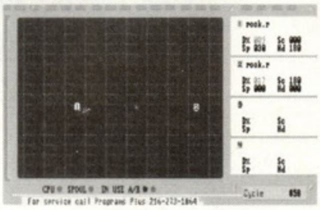
ECHO – This utility is a replacement for the AmigaDOS or ARP Echo command. This version provides easy colour setting and positioning of all echoed strings. It's completely compatible with the AmigaDOS and ARP Echo commands – all your old batch files will work correctly.

ETIME – Displays the elapsed time between events. This could come in useful in scripts to display the elapsed time between the beginning and ending.

INCR – Allows you to keep a total count of any event run from a batch file. Incr will take a number from a file, increment it by one and display the result. The new count is written back to the file (*Gosh, how useful – Ed).*

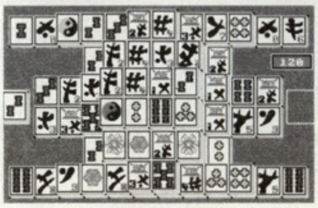
PKAZIP – The PKWare ZIP tool provides functions to create, examine, extract, test, modify, display, and print files which are in the ZIP compressed format.

UDATE – Udate is a replacement for the AmigaDOS Date command and contains many options similar to the UNIX date command. Udate will allow you to set the date and time via prompts or directly from the command line.



Robots in Disguise™... program your *CRobots* with enough intelligence and you should wipe out the Decepticons™ easily.

CHINA CHALLENGE – If you're familiar with *Shanghai* or *Mahjong*, you'll find *China Challenge* a doddle to grasp. In fact, it's only the images on the *China Challenge* tiles that are different to the classic board game. The idea is to remove the tiles that make up the pile (the so-called 'Dragon'). The Dragon is composed of 120 different pieces.



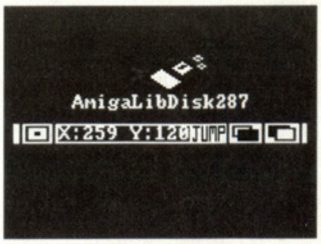
Make the change, meet the China Challenge. Ahem... on the other hand, perhaps not.

You'll always see four tiles displaying the same picture or Chinese symbols. As the pile can't be removed indiscriminately, there are certain rules allowing the removal of tiles.

First, you can only remove pairs of tiles with the same image or picture on the surfaces. Second, the tiles you want to remove must not have another piece to their right or left. Both tiles must be free and not have any neighbour.

MOUSECOORDS Fish 287

The program's name gives its game away. It's simply a small utility which sits in the menu bar and displays the mouse coordinates.



Keep tabs on your mouse pointer with *MouseCoords*.

TOP TEN DEMOS



17Bit Disk Numbers
1 NEWTEK DEMO 2 (559/560)
2 THE RUN (591)
3 INTROS 32 (587)
4 DMOB HOUSE MUSIC 2 (554)
5 VISION MEGADEMO IV (580)
6 AMIGA CHART (557)
7 DEXION MUSIC DISK (547)
8 PREDETORS MEGADEMO (588/589)
9 FORGOTTEN REALMS SLIDESHOW (601)
10 HOLY GRAIL (556)

TOP TEN PD



GTS Titles
1 THE ALL-NEW STAR TREK
2 EDUCATION WITH THE AMIGA
3 TV GRAPHICS
4 HOME BUSINESS PACK
5 K/O THE VIRUS
6 HARD DISK SPECIAL
7 PD SPECTACULAR
8 DOS LAB
9 LEARN AND PLAY
10 BLIZZARD

BEAT BOX

Whatever your musical tastes – whether you're into hip hop, house or hill-billy – the following disks are for you.

SUBWAY 17Bit Disk 609

Those Subway boys have put together a very original and amusing music demo. While five of the tracks aren't particularly inspiring, a novel number called *Clap* makes the disk well worth adding to your collection. Four hands at the top of the screen clap the tune – brilliant! And so simple.

VISION MUSIC MASTERS 17Bit Disk 610

For a selection of eight quality tracks ranging from boogie to bizarre, look no further than Vision's compilation disk. Guaranteed you'll pump up the volume when these are playing.

PACE MUSIC DISK 17Bit Disk 613

***Ride on Time, Smooth Criminal, Right Back, Phantom of the Opera, Bad* (it's true!), *Eye of the Tiger, Suburbia, Revolutions* and *Don't Make me Wait* are the nine songs sampled and remixed on the Pace music disk. A variety of authors – including Demon, Magnetic Fields, Nukebusters and Track 41 – have contributed to the compilation. The tracks vary from passable to plausible.**

DEMONS 4 17Bit Disk 624

From across ze channel comes zis disk full of ohh la la, you know, merry music from la France. It is tres good.

SUPPLIERS

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D 108: NBS Animations Disk 1 (Window Man, Walking Man, Frog, Hammer)
D 112: Vortex 42 Megademo 2 (Packed with Vortex 42's latest demos)
D 114: Madness Demo (Graphics & Music Demo)
D 118: Ray Traced Demos (Includes Newton's Cradle)
D 119: Juggler Demo (The famous demo which sold 1000's of Amigas)
D 121: Outsider Acid Demo (Trippy Gaphics & Aceeed Music, v good!)
D 122: Horror Demo (Digitised animation of Violent Amputation etc!)
D 125: Dexion Megademo (Highly recommended)
D 131: Black Monks Picture Demo (Demo & Digitised Pictures)
D 132: Arcadia Megademo (New Demo)
D 133: Star Trek Animations (3D Animations 512K!)
D 136: Alcatraz Megademo (New Demo)
D 138: Raf Megademo (Demo, please note ... **2 discs**)
D 140: Kefrans Demo (Excellent highly recommended)
D 142: Scoopex SAE PC Demo (Picture Show & Music)
D 145: Forgotten Realms Picture Show (Fantasy Devil Hobbit type pics)
D 146: RSI Mega Demo **(Worlds best Mega to date. Get it!!...2 discs)**
D 148: Charon (Classical Style Demo ... **1 Meg only**)
D 149: SAE Scoopex #36 (More classy demos)
D 150: Ian & Mick (Mega Demo inc Toilet Door Demo)
D 151: Deathstar Mega Demo (inc Fantastic Cosmic Explosion ... **2 disks**)
D 152: NASA Pictures (Digitised Piccys)
D 153: Puggs In Space (Brill Demo. Get it!!!)
D 154: CHH Animation (...of a knight coming out of a book...**1 Meg only**)
D 157: Space Ace Demo (Cartoon Graphics ... Great Sound!)
D 158: Freekd Out (Great Music by The Crusaders Demo Crew)
D 159: Vision Mega Demo 4 (More great scrolly stuff)
D 160: Trilogy Megademo (New in! Recommended inc Shootemup! **2 disks**)
D 161: Predators Megademo (Includes two games! Don't miss it! **2 disks**)
D 300: Arsewipe (Adults only answer to your toilet problems)
D 301: Miller Lite (Micro Veersion of the TV advert with digitisation)
D 302: Holstein Pils (John Wayne/Gryth Rees Jones TV ad)
D 501: Probe Sequence (Strange life on a distant planet ..explore)
D 503: Luxo Teenager (Ray Traced Demo ... **1 Meg only**)
D 504: Ghost Pool (Pool game with invisible players!!)
D 505: Space Fighter (Another Ray Traced Demo ... **1 Meg only**)

MUSIC
D 205: Kactus & Mahoney (Superb! Can't be rated highly enough)
D 207: Miami Vice Theme (Huge, full sample ... please note ... **4 discs**)
D 209: D-Mob Music 2 (Music Demo)
D 212: Byterappers Music 3 (Music ... and its good!!)
D 213: Titanix Music 1 (Our best 512K music disc, don't miss this one)
D 214: Enemies Music 3 (Music demo.. with Spectrum Analyser, Fantastic!)
D 219: Crytoburners Music Disc (Music, Music, Music!)
D 220: Alf 2 Mix (Music Samples from TV Show)
D 224: We Want Some Pussy Rap (What are we going to do about it?)
D 226: Sonic House 1 (More of the same)
D 227: Powerdrive 2 (Music ripped from games)
D 228: Random Access (3 good remix tunes inc Paranoimia)
D 229: Vangelis Demo (Good stuff ... **1 Meg only**)
D 230: Digital Concert 2 (Over 12 mins of House)
D 231: Destination Docklands (J. M. Jarre at Docklands)
D 232: Blowfly (Music Rap ... could be offensive to some)
D 233: Darkstar Music Disk #4 (More great music)
D 234: SAE Disc 35 (New & very good!)
D 236: Sunrise Vol 8 (Great stuff!)
D 237: Clapping World Demo (Fantastic original music & graphics)
D 238: SAE Disc 40 (Hot Off The Drive!)

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G 100: PD Shoot'em'ups (5 games including Invaders, Asteroids etc)
G 101: Yahzee (Dice game, plus Connect 4 & Othello)
G 102: Yelp! (A top quality 'Painter' game)
G 103: Star Trek (Game 1) (**2 disks, 1 Meg only,** great sound)
G 103A: Star Trek (Game 2) (**3 disks, 1 Meg,** 2 drives, pics & sound)
G 105: Adventure Games (Text Adventures)
G 106: Arcade games (Early PD games ...)

XXX-FOR ADULTS ONLY (please state that you are over 18!)
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X 102: Picture Show Vol 2 (Same Pinups with Slideshow & Glen Miller!)
X 103: Sam Fox Special (Stretch That Monitor Screen!)
X 104: Mayfair (Black & White pics)
X 105: Picture Show Vol 3 (More of those ladies)
X 107: Megaton Man (A brilliant amusing naughty disk!)

UTILITIES
U 100: Virus Killer Disc (Virus Checker, System Z & more + Infector!!)
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U 202: Utility Disc 2 (11 Cli utils. eg Blitzfonts, Hexcalc, Setkey etc)
U 205: Game Music (Creator create your own music, superb!!)
U 206: Ghost Writer (Latest demo construction kit)
U 208: Powerpacker (Powerful Cruncher utility, used by experts)
U 302: Fonts Vol 2 (even more fonts)

LATEST IN
X108: Showering Girls (digitised pictures of .....) (**1 Meg**)
D162: Kefrens Mega Demo 8 (inc: create your own Bob Demo)
D166: Silents Mega Demo (Some original stuff on the new Danish Demo)
D168: Pendal Europa 50 (Now Look!! Get this disk - Fantastic Crusaders Music)
D239: Dark Star Music Disk 4 (8 great music mixes)
D243: Fresh Cola Music 1, (aacciidd to Sibelius well worth a listen)
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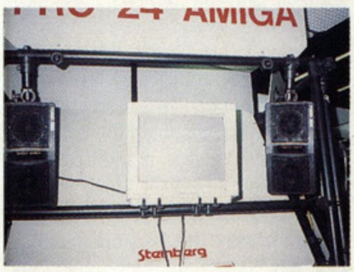
JOIN THE PROS

It looks as though *Music-X* will shortly have a rival. After two years of development Steinberg have finally launched the Amiga version of *Pro 24*. This very successful program has been totally rewritten for the Amiga. Instead of opting for a quick port-over Steinberg gave the original program to a new programmer and told him to start from scratch. The result is a very professional package with numerous new features.

The basic screen looks the same – 24 tracks that can either be run simultaneously or chained together – but the lower section of the screen is completely new, with lots of function







buttons and track information that doesn't get in the way of operations as it did on the ST version.

Pro 24 is accurate to 96 pulses per quarter note and has extremely flexible quantize functions. Editing is achieved by a grid method with simple score display and there is a separate drum editor page.

Recording takes on numerous forms and you can punch in and out or 'cycle record' for as long as you want – meanwhile a rather clever routine saves up to 127 'takes' of any section and you can pick which one you want to keep.

Not only is there a MIDI volume-mixing page but also a similar velocity-mixing feature and to top this there is an extremely smart 'echo' which has all the controls that you would find on a separate effects unit. *Pro 24* will store and save in a variety of files; MIDI, SMUS/IFF, drum patterns, set-up



THE Frankfurt FILE

JON BATES reports from the Frankfurt Music Fair, possibly the largest music gathering in the world, which attracted exhibitors and visitors from every country under the sun.

TIGER FEATURES

Over on the Dr T stand the latest budget (under £100) sequencer, *Tiger Cub*, was having its first run out. The Amiga version will support up to 16 internal voices at any one time and is a very simple 12-track sequencer with a novel graphic display of the notes you have played.

The program incorporates features from some of Dr T's professional software plus a few other neat tricks – like automatically naming tracks and channels. It also has some rather clever graphic displays and editing features for controlling volume, pitch bend and other MIDI controls like tempo. Bundled with the software is an additional program, *Quick Score*, which allows traditional music notation display and print-out from music created in the main program. We will be reviewing *Tiger Cub* as soon as it arrives.

Incidentally, Dr T's are probably the foremost producers of Amiga music software with over 20 titles in their catalogue.



pages and systems exclusive. To run at full speed the program will require a minimum of 1.3Mbytes but it will neatly section itself off into modules so that A500 owners can run it as well. You can expect a full review when it arrives, which is reckoned to be about six weeks' time. Price should be about £285.



Fun for Beginners

The other major announcement is of a combined effort between Kawai, Steinberg and Commodore aimed at the novice who knows nothing about music and computers. What you get is a Kawai single keyboard, which is one of those self-accompanying instruments, plus a very colourful piece of software and an interface.

The software is, in fact, a five-track sequencer for drums, bass, chords, and a couple of melody lines. Equipped with this you can write your own tunes and get the keyboard to play them back. Things get clever when another page on the screen lets you alter the sounds to suit yourself – in other words it can create new voices, just like a synthesizer. More pages allow you to edit notes in either graphic or traditional notation and if you like you can alter the accompanying patterns in the keyboard. Called 'FunLab', the package is expected to sell at around £350 and should be here in about September, just in time for Christmas sales. For a little extra cash you can even purchase matching speakers. Matching, that is, in terms of colour: the whole package is in the same shade as the Amiga shell.

French know their Onions

Of more than passing interest was a French package called Midipack. Inside the translucent briefcase is a 24-track sequencer, a multi-timbral 8-channel tone module with 99 voices plus 3 drum kits, an interface, all cables and a starter pack of songs plus full documentation – in other words the lot.

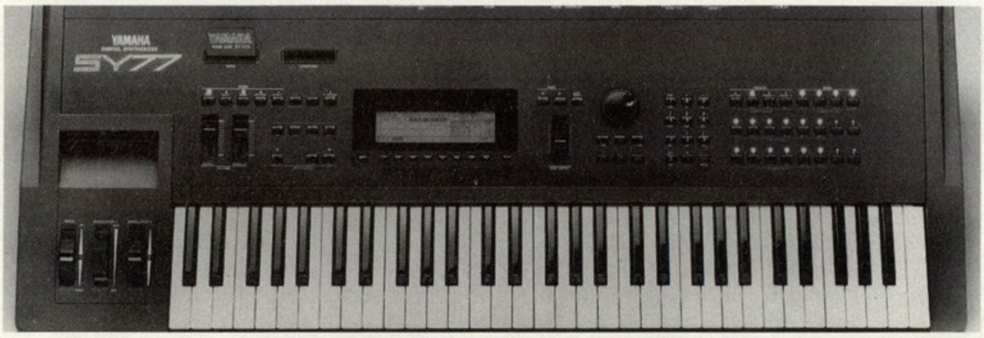
Backing this up is a huge library of songs and teaching material on disk, the idea being that you play along with, say, Kylie Minogue and learn to play the various parts (just what you've always wanted!) You can also learn to play in different styles or just simply learn to play the instrument. Distribution deals are pending at present and the intention is to penetrate the education market rather in the manner they have done in their native country. Mind you, mes amis, you'll certainly need to brush up on the old "engleesh, 'ow you say, longuich" if the press release was anything to go by.

Comment

I was not the only member of the press to comment that nearly all new synths are starting to sound remarkably the same – not surprising, since about half of them are partially or totally produced by Yamaha and the others use very similar methods of creating sound – modulating bits of samples with other bits of samples with occasional bit of digital synthesis thrown in. In fact, I am rather glad now that I have held on to my heavyweight hernia-giving analogue synth, because its sounds are quite refreshing to hear after a dose of contemporary synths.

Amiga sales figures in Europe are better than those of the ST and I get the firm impression that we will see much more European Amiga music software in the near future.

SYNTH CORNER



YAMAHA

Not only did Yamaha show the SY77 (ABOVE), the new and complex synth, but they also had its siblings in the form of the SY55 and SY22 (BELOW). The latter will probably find most favour as it is a multi-timbral instrument which is capable of handling eight instruments simultaneously.

The SY77 has a neat way of creating sounds by using a joystick. You may recall that Sequential Circuits developed a 'Vector Synthesis' system where you mix the sounds from maybe four sources by a joystick and that Sequential were bought by Yamaha a while back. It also features sampled sounds with an advanced version of Frequency Modulation – the same as the DX generation – and comes with 128 samples and 256 preset AFM sounds on board. It also has a touch-sensitive keyboard and a wide range of editing facilities including a random voice generator. All this for under £800 is rather a bargain.

KORG

Korg launched a 'WaveStation' – not something you find at a leisure centre swimming pool. This has an uncanny similarity to the aforementioned Yamaha but on a more advanced basis. It too uses advanced vector synthesis and samples combined. Not a bad synth, it has two built-in effects units (as does the SY77, it should be said). Perhaps the similarity has something to do with the fact that Yamaha acquired the Korg research and design department some time back. Price for this was not confirmed but will almost certainly be in excess of £1500.

ROLAND

Roland showed the new version of their highly successful D-50, the D-70. The sounds are richer, fatter and very clean and the keyboard has grown a bit. You can also have multi-timbral set-ups for using with a sequencer. Price for this, too, was vague but around £1400 sounds about right. Meanwhile the Peavey corporation were marketing the John Wayne of synths, the PDM-3. It proudly proclaims that it is made, researched and designed in the US of A. It has a fairly hefty price tag of around £2000 and although it has a built-in sequencer, lots of samples which are modulated and built-in multi-effects, to be honest it felt a bit tacky under the fingers.



AMIGA SOUNDBLASTER



Everyone knows that the Amiga has excellent sound capabilities. Televisions and monitors do not produce hi-fi sound output, so until now it has been impossible to connect your Amiga to an amplifier to appreciate the sound quality. The Amiga SOUNDBLASTER is a small amplifier that comes complete with two high quality 50 watt 3-way speakers. It is easily connected to your Amiga and adds a new dimension to all your games.

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FROM THE Beginning

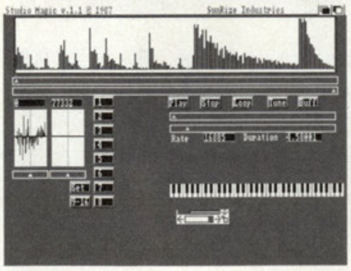
JON BATES takes complete novices to music and the Amiga onto the nursery slopes. If you don't know a thing and ain't got that swing then here's where you start.

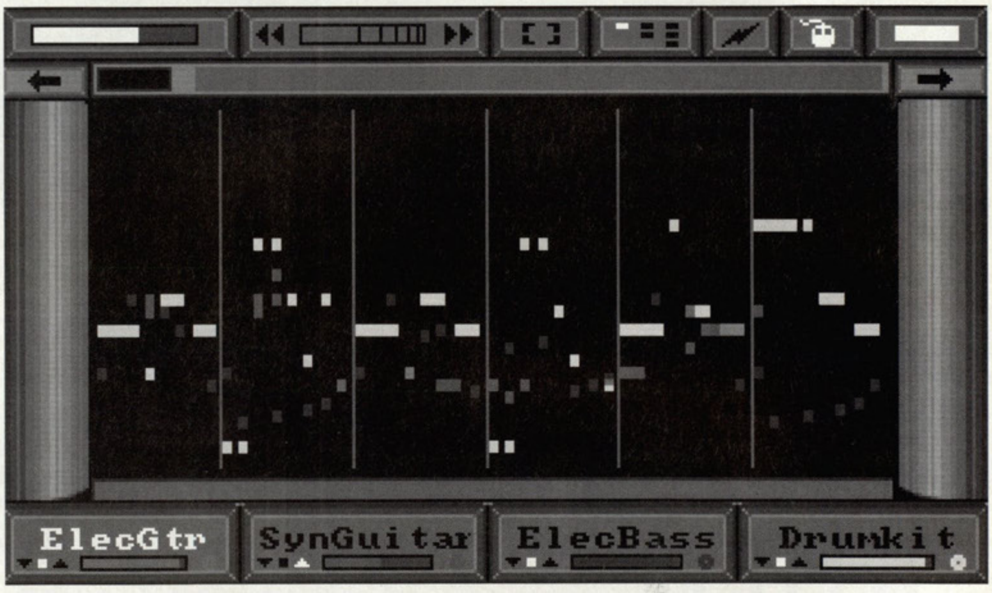
From playing numerous games you will already have realised that your Amiga is not only an expert at graphics: its sound capabilities are pretty good as well. How do games programmers get those stunning soundtracks without any extra synths bolted onto the computer? The simple answer is that the sounds you hear are actually synthesizers or real instruments but they are played inside the Amiga. Baffled? The word is 'sampling'. The Amiga is capable of playing four sounds at once and with the correct software you can start to create sounds and tunes very easily.

Dentist's Drills

Your Amiga has a very good sound chip inside it which is capable of actually creating and synthesizing sounds. Like all computer sound chips it creates sound by digital means, not using steam-age electricity. At some point the digital sound has to be converted to something that will make sense to your ears: in digital format an instrument would sound like a high speed dentist's drill.

The format that is needed to make your headphones and speakers work is called Analogue and the part of the chip that handles this is called a D to A converter (DAC). No prizes for guessing what this stands for. This is important because any sound can be stored in digital format – and this is the whole basis of sampling.





ABOVE LEFT: Samples are excellently handled by *Studio Magic*, but without an external keyboard your options are limited.

ABOVE: No worries here: with no talent and no knowledge you can fool lots of people with *Instant Music*.

Now suppose you load in a set of files that contains the digitized sounds of a set of instruments. You then get the Amiga to take any file and run it through the DAC. The result will be the sound of the instrument as it was played. Hey presto – we have reproduced an instrument by replaying the sound. If we go one stage further and put some maths in its way we can play the sound back at different pitches and hence play toons! Obviously there is quite a bit more to it than that, but that is a very broad outline of how the Amiga plays such incredible sounds.

You Should Be So Lucky

Since I am assuming that you are interested in music creation but have never really had a go before, I guess I can also assume that you wouldn't want me to tell you to rush out and buy lots of shiny new equipment and expensive, complex software. Personally, I love messing around with art programs: but unfortunately there's no way I could justify buying digitisers, frame stores, full-colour printers and the like.

But as an Amiga owner you are lucky – the sound chip that you get in the machine is *so* capable. For a starting point you really don't need any peripheral devices, just some software to play with and sound files, which will usually accompany the software. Not that it matters too much as thanks to the common file format of the Amiga you can use sounds from pretty well any music program.

Coverdisk Stunnas

If you want to check out some of the music possibilities you could do worse than flick back through a few of our Coverdisks. *BMP* on Coverdisk 6 has a good example of digitized sound and the way it looks when displayed graphically. The program will give you a vague idea of how some music programs work. Issue 7 has *MED*, a sound sequencer not unlike *Sound Tracker* with absolutely loads of facilities and very typical of the "data stream" approach to music creating. Also on 7 is a demo built from sounds sampled by *Master Sound*, a sampling program from Microdeal. Issues 3 and 5 have little music demos on them. Our back issues dept at The Old Barn, Somerton, Somerset, TA11 7PY (Tel 0458 74011) should be able to help you for the princely sum of £2.95. Sadly, Issues 1-4 are sold out.

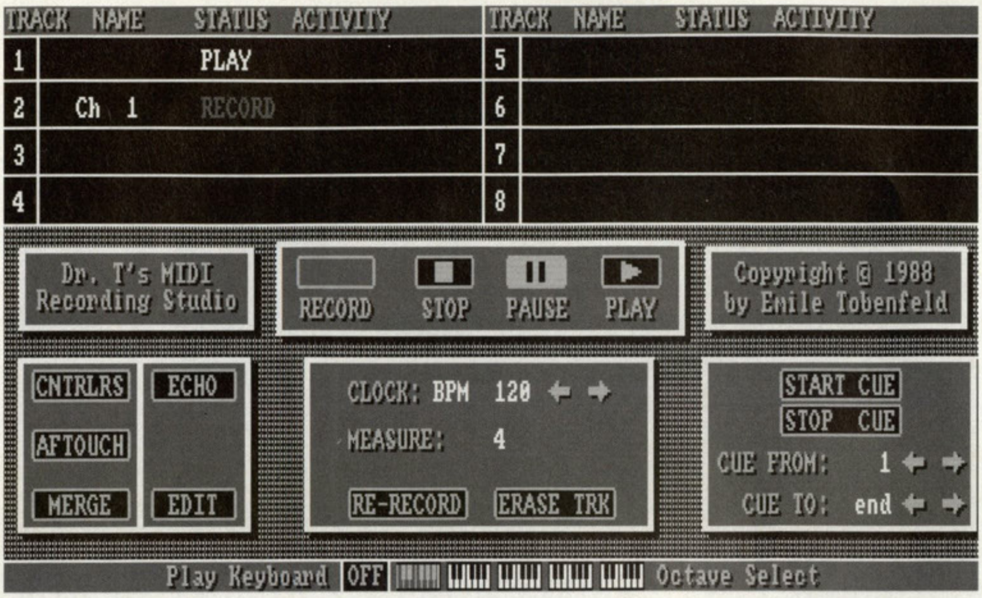
Public Domain?

What is wanted is cheap but easy-to-follow music software that uses the internal chip, doesn't need an external music keyboard and sounds pretty good. The most obvious path to take is the Public Domain library. So far most of the PD programs I have seen

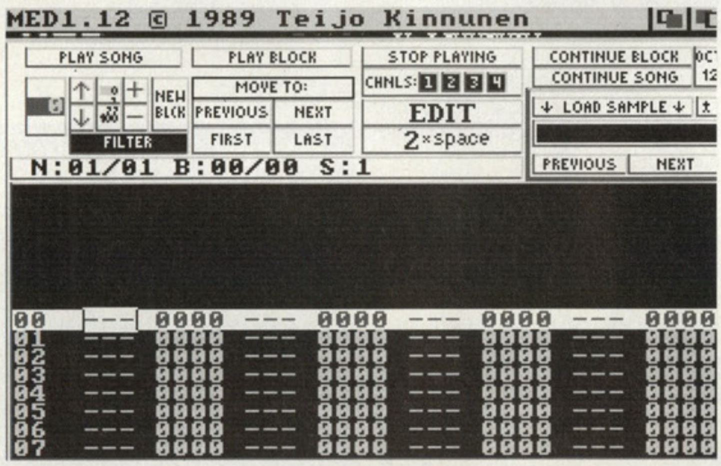
could have one drawback as far as you, the beginner, are concerned. Namely they are all quite complex to follow in terms of putting a piece of music together.

This includes *Sound Tracker*, *BMP* and *Musical Enlightenment*, all of which tend to be written from a computer programming angle so that notes have to be input as a long list of numbers or note names. Although they are often very powerful players of music they are quite tedious to use and do assume that you have worked out the piece of music beforehand, which in turn tends to assume that you have a pretty good working knowledge of music.

Personally I would try and avoid them for a bit unless you have the numeric logic and patience to work with them although of course – to coin a game-show – the price is right.



ABOVE: *MRS* is the cheapest conventional sequencer: it opens up a whole new world for the Amiga.



RIGHT: The working screen of *MED* from Coverdisk 7. This has to be the cheapest solution, although you do need to know a bit of maths and music.

The Chef's Recommendations

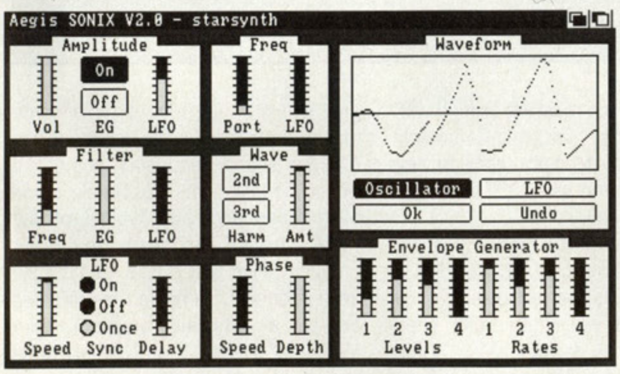
The criteria I have used in selecting the following software are value for money and user-friendliness, coupled with the ability to use *only* the Amiga.

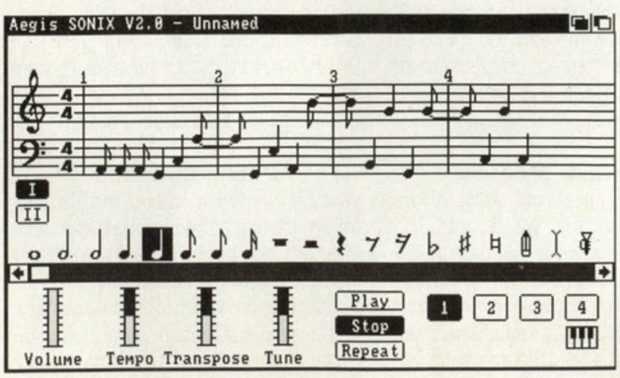
Instant Music

Although it has been around for some time now the Electronic Arts program *Instant Music* still gets my vote for the easiest way for a beginner to have fun straight away musically. You don't need to have any knowledge at all, it comes with a whole heap of songs and backings with sounds to match and you can play along with it by using the 'mouse jam' feature which is so cleverly organised that even our editor could sound musical. It is now available at about £20 and makes a pretty noise for that sum.

BELOW: *Sonix* is excellent at creating sounds...

BOTTOM: ...but is awkward to use if you can't write music.





Dr T's MRS

The other item on my shopping list would be *Dr T's Music Recording Studio* which makes use of the Amiga's internal sounds and lets you record tunes from the qwerty keyboard. With eight tracks for you to record on it is user friendly and organised very much on the lines of a conventional piece of sequencing software with such features as a high level of note accuracy, track merging, echo, "tape deck" controls, cue points, track muting, event list editing and quantize.

Although it uses the Amiga sounds it also has full MIDI specs so that if you do decide to move up market and purchase some sort of synth or tone module you are already equipped with the right software. If you grow out of MRS the files in which your tunes are stored are still compatible with more expensive Dr T software. *MRS* will set you back £59.95.

Also Rans

There are other contenders to choose from but as you will see they have some drawbacks:

***Music-X Junior*, £99:** Supports internal voices but you can only enter notes by typing them in individually in the editing section. This is a MIDI sequencer, so it does require use of an external MIDI keyboard.

***Studio Magic*, £56:** Excellent at chopping up samples and creating new voices but requires external MIDI keyboard to use the sequencer.

***Aegis Sonix*, about £50:** Great at creating sounds with the best on-screen synth functions going. Play the sounds from the qwerty keyboard but to sequence them you will need to be able to write music: it uses traditional notation. Does not support MIDI.

INFORMATION

All the programs mentioned will run on all Amigas. For more information you should be dialling these telephone numbers:

Steinberg Pro 24: **099 389 8484**
Dr T's Tiger Cub: **01 258 3454**
Yamaha: 0908 371771
Roland: 01 568 4578
Korg: 01 427 5377
Sound Tracker: **0705 266509**
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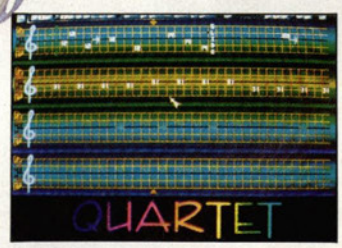
MIDI COMPATIBILITY

If you have a keyboard or instrument with a MIDI OUT socket and a MIDI interface plugged into the Serial Port of your Amiga, then Music can be input into any of the Amiga's channels by selecting the RECORD mode. As you record, Quartet plays back the other three channels from the audio out sockets on the Amiga, providing you haven't switched the channels off. You can free up any sound channel so that as music is being played, you can accompany it in your chosen sample, either from a MIDI instrument or the Amiga keyboard.



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Programmer extraordinaire Dave Jones swims once more to the surface to bring details of *Menace*'s murky depths.

STARBLANKER
Save your screen: shower it with stars. Run the program – you'll get the idea.

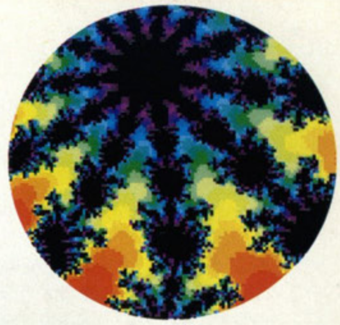
UP TO £800 UP FOR GRABS!

Think you've got what it takes to write for the *Amiga Format* Coverdisk? Get your programming tools out and prove what you can do, and earn yourself some cash in the process. We're after Workbench hacks, demos, utilities, games, game cheats... You could earn up to £800! Turn to Page 116 for details.

BACK UP YOUR COVERDISK IMMEDIATELY!!!

DON'T KNOW HOW? SEE P 116 FAST! ENSURE YOU WRITE-PROTECT YOUR DISK BEFORE USE!

disk EXTRA







Where else can you get a magazine and a disk containing almost 900K of programs for under £3? RICHARD MONTEIRO guides you through the Coverdisk's stunning offerings.

TOWER OF BABEL

PROGRAM: RAINBIRD
FILES: TOWER OF BABEL, BABEL.DOC

Many generations after the Noah's flood, the people of the World congregated in a place called Shinar. There they built a tower of enormous height, reaching far into the clouds, so they could climb to the top and communicate with God.

The tower didn't attract God's attention, but it did arouse the interest of a passing Neravas Class 1 cruiser from Zantor. The benevolent Zantorians left a triad of robots to assist the people of Shinar with their tower. The spider-like robots and remaining Shinarians continued adding to the tower. The purpose was now twofold. The Shinarians still wanted to meet their maker, and the spiders needed to get high enough to transmit a message to their owners so that they could be taken back to Zantor.

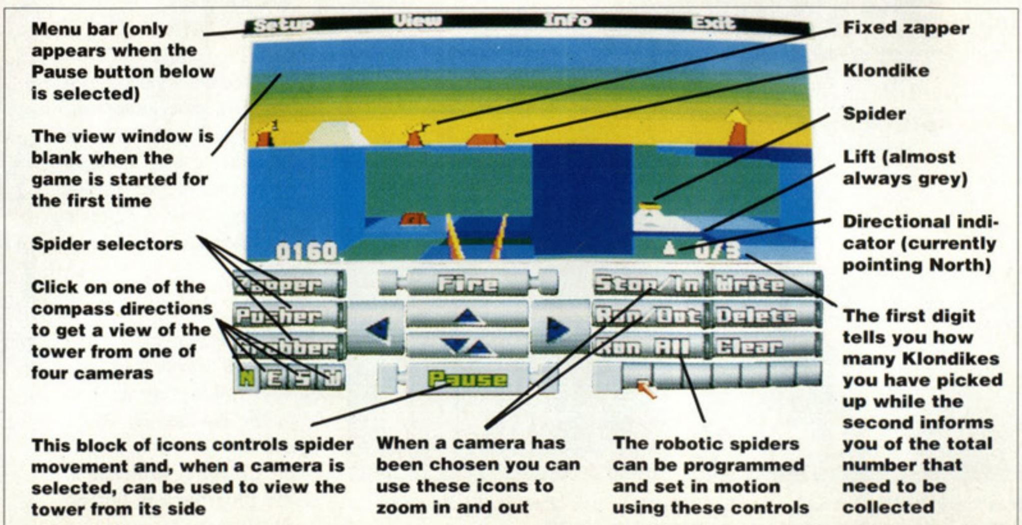


Those damnable Shinarian tower-builders – look what they've left you to clear up.



A bad day at the office is nothing like a bad day at the office in the *Tower of Babel*.

This happy co-existence lasted for a long while, but some humans



became jealous and with the knowledge they'd gained from the spiders, they began to deter the Zantorian robots from progressing up the tower. Explosive devices were built, blockades positioned and traps set. Even the spiders' energy packs were hidden. Eventually the spiders discovered what was happening and destroyed the evil Shinarians.

As far as can be ascertained, the spiders are still trying to get out... And it's up to you to help them. To do this you must guide three spiders, either individually or simultaneously, past obstacles. You will also have to help them find Klondikes (their energy modules, hidden by evil Shinarians).

Getting Started

From the main menu that appears when you insert the Coverdisk for the first time, press F1. Alternatively double-click on TOWER OF BABEL in the TOWER OF BABEL drawer.

You'll be presented with a credits screen. Press the space bar to continue. The following acts as a guide to the options Play Tower, Zapping Practice, Pushing Practice and Grabbing Practice.

Until you move or fire a spider, the tower remains static and you can change views at will.

Very briefly, you have three spiders (Zapper, Pusher and Grabber) which must be individually controlled to solve puzzles, rid the tower of alien filth and collect Klondikes. Each spider has its own characteristic – particularised by its name. By highlighting a spider's name and clicking on the directional icons (arrows) it's possible to control a spider and see the tower through its eyes. Compass (or camera) icons let you see the tower from North, South, East and West viewpoints.

A menu bar appears when you click on the Pause icon. Options in the menu bar let you, among other things, determine how spiders and other items are viewed. Clicking on the menu heading forces the other options to appear.

Please note: all control is via the mouse. There is no luck in *Tower of Babel:* only logic will get you through successfully.

AMOS

PROGRAM: MANDARIN
FILES: AMOS, AMOS.DOC, 3D, COMPACT, MUSIC, MOUSE.ABK plus all files and drawers in DATA

Remove Intuition from an Amiga and you have a machine that really can perform: speed with unparalleled processing power.

So what's all this got to do with *AMOS*? Plenty! *AMOS* is a sophisticated version of BASIC – ideal, in fact, for games programming. *AMOS* replaces Workbench functions – windows, icons, alert boxes, item selectors – with its own proprietary features. The outcome is joyous editing and execution speeds of BASIC programs.

Many of *AMOS'* commands are compatible with AmigaBASIC. However, there are countless new commands that offer incredible programming power.

Because this is only a demo, there is no list or explanation of available commands, but you can gain an insight into what *AMOS* is capable of by running the numerous demo files present. By examining the commands in the demo listings (or even altering the listings directly), you should be able to piece together your own programs. Failing that, dig out your AmigaBASIC manual – many commands will work in *AMOS*.

Getting Started

AMOS will only run from the CLI, so you can only get it up and running by pressing key F2 from the main menu on the Coverdisk. Do



***AMOS'* editing environment is so much faster and more friendly than AmigaBASIC's. You won't know how you coped.**

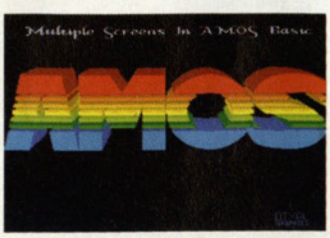
the following if you wish to load and run *AMOS* programs quickly:

1. Press Shift and F1.
2. A file selector will appear. Click on the drawer DATA.
3. Click on the drawer DEMO_FILES that appears.
4. Click SetDir in the file selector.
5. Click on any file with a .AMOS extension in the selector window.
6. Click on OK.
7. Once the file loads, press F1.

The file selector might not appear if you only have 512K. If so, press Shift and F8, and try again.

Once *AMOS* has booted you will be presented with the main work screen. From here you can load BASIC files and edit and run them. The save option has been disabled in this demo version. You can start editing immediately by pressing keys on the keyboard. See the help file on the disk for further information.

PLEASE NOTE: Click the left mouse button when you return to the Coverdisk main menu after leaving *AMOS.* If you don't, you won't be able to access anything from the menu.





Not only HAM and extra halfbrite modes, but also multiple screens are all fully implemented and supported in *AMOS*.

SHOOTOUT

PROGRAM: CHRIS HOLLIMAN
FILES: SHOOTOUT, SHOOTOUT.DOC

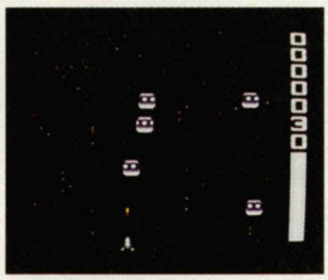
Billions of blistering barnacles, the blithering BOBs (Blitter OBjects) are back, bombarding the Earth at break-neck speed. Grab a joystick and get blasting in Chris's addictive shoot-em-up. Leave your brain at home: just move left and right and hit fire when you remember. Simple yet highly playable.

You have a shield with a squeak alarm fitted. Whenever a BOB hits you, your shield lets you know about it. The bar to the right of the screen shows your energy. When that's gone it's game over.

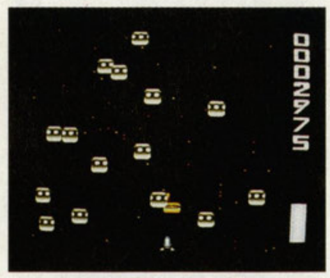
Getting Started

Press F4 from the Coverdisk menu or double-click on SHOOTOUT in the SHOOTOUT drawer from Workbench.

Shove a joystick into Port 2, hit the left mouse button to start play and then use the joystick to control your BOB bruiser. Hitting the left mouse button during the game will pause the action.



Hah! Five BOBs charging around the screen... a pathetic attempt. No sweat to destroy these boys. See you in hell, suckers!



Sheeeatt! BOB has brought 20 brothers with him. And they look mad enough to make sidewalk souffle out of you in an instant...

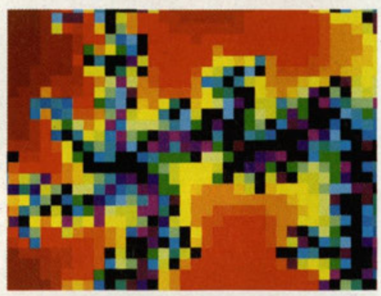
MOOREFRACTALS

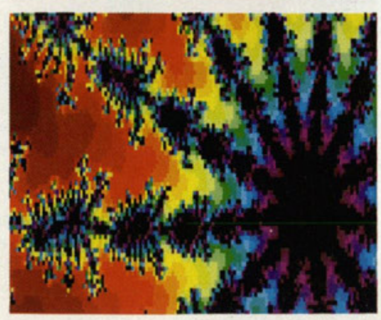
PROGRAM: TIM MOORE
FILES: FRACTALS, FRACTALS.DOC

Tim Moore's very own Mandelbrot plot generator, especially written to accompany this month's major feature on Chaos computing and fractals which starts on Page 15.

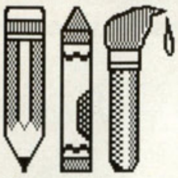
Getting Started

F5 from Coverdisk main menu. Double-click on the FRACTALS drawer and then on FRACTALS program icon from the Workbench. Once you've got this far, simply refer to Tim's explanation of the program and tips on Page 20 of the feature.





Pdom PD Amiga Software Pdom PD Amiga Software



Graphics

AMP3 Graphics Pack 1 – Amiga MCAD excellent CAD package, VDraw brilliant painting program, Ray Tracer Generator, An object–orientated drawing package, IFF to pieces jigsaw program, ROT 3D drawing program. Loads of utilities.
A 3 disk pack for only £7.50!

AMP21 Graphics Pack 2 – Mandelbrot Explorer, DBW Render a Ray Tracing utility, ST2IFF picture converter, HAM2IFF picture converter. Excellent value!
A 3 disk pack for only £7.50.

Games

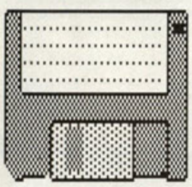
AMP1: Home Business Pack, RIM the relational database and HyperBase database, UEdit the word processor which includes builtin help and tutorials, spell checkers, and VisiCalc the excellent spreadsheet. All auto loading.
A 3 disk pack for only £7.50!



Application

APDC 15 – Icon utilities: full of icon files and creators.

AMICUS 22 – Printer Driver Generator V2.3.



Utility

FAUG 67 – Disk X V2.0 the sector editor, Hand Shake V1.06b a VT100 terminal emulator, Pack It a whole disk compressor.

FFISH 158 – DiskX SectorEdit, MSDOS Reads MSDOS or ST format into RAM:.

FFISH 243 – No Click stops the disk drive clicking if no disk present. Pass Word you specify the password for your system security. Pcopy V2.0 the excellent disk copier.

APDC 18 – Floppy Disk Utils: Quick Copy, Disk Mapper, Disk Salvage, Virus Check, System Utils: Blitz text editor, TimeSet, ACalc a calculator, Amiga Monitor, MeM Grab fast memory grabber. DirectoryMaster. A must get disk for your Amiga P.D. collection! Excellent.

FFISH 244 – Boot Intro you specify The headline text of upto 44 characters and the scrolling text of upto 300.

FAUG 41 – Amiga Arc V0.2 compatible with ARC V5.0.

PDOM93 – ARP V1.3 Amiga DOS Replacement Project.

FFISH 58 – ASDG a RAM disk that survives reset, Big View displays any size IFF picture, EGraph creates graphs from X,Y pair text files. NewZap disk sector editor.

FFISH 188 – Boot Intro V1.0 displays a scrolling and a still message of your choice at boot up.

FAUG 50 – Dir Util VI the disk manager.

PDOM 59 – Ameteur Radio Disk: disk full of HAM utilities.

FFISH 157 – XIcon V2.01 allows you to call up scripts containing CLI commands from an icon.

AMP8 – Games Pack 1 – Cluedo, Klondike, Canfield, Cribbge, Backgammon, Yahzee, Missle Command, 3D Breakout, Empire, Gravity Wars, Hanoi, Hockey, Jackland, Othello Master, Pacman, plus loads of other brilliant games.
Amazing value!
A 3 disk pack £7.50!

AMP22 – Games Pack 2 Escape from Jovi V3, Monopoly, Amoeba Space Invaders, Cosmo Roids, StoneAge, Back Gammon, Mastermind, Reversi, Black Jack, YachtC, Daleks plus loads of other brilliant games.
Amazing Value!
3 disks for £7.50!

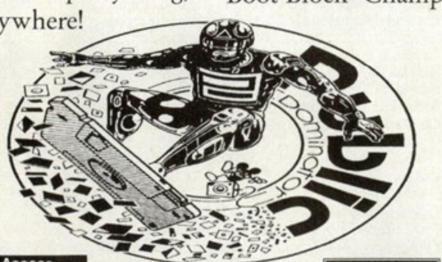
PDOM90 – Tennis! excellent tennis action game, fully working.

PDOM79, 80 + 81 the StarTrek game! Abrilliant three disk graphics game! Requires 1MB RAM.

FFISH253– Elements a display of the periodic table.

FFISH258 BACKUP allows you to backup anything, anywhere!

PDOM 62 – The Public Dominator Anti Virus Disk: Virus X V4.0, VCheck V1.2 (for memory), VCheck V1.9 (for disk drives), Zero Virus V1.3 the fully integrated virus detector and killer. Also Boot Block Champion the utility.





Demos

PDOM 86 – The Memory Expansions demo No1.

PDOM 87 – The Memory Expansions demo 2. Both Require 1MB RAM.

PDOM 65 and 66 – Red Sector Mega Demo. THE best demo on the Amiga! A 2 disk demo with the best sounds and graphics! A must!

PDOM 73, 74 and 76: The Star Trek Dry Dock Demo, Starship Enterprise demo and the Star Trek Shuttle demo. Amazing graphics.

PDOM 83 – Space ACE Demo an excellent demo of the game with fabulous animation and incredible sampled sounds!

Access VISA

Most of the disks in this advert actually contain more than is listed, for details of the service and a free copy of the 56 page catalogue send a Stamped S.A.E. (If you are ordering you will get the latest catalogue).

PD Disk Prices: 1 to 5 disks are £3.00 each, 6 to 10 disks are £2.75 each and 11 or more disks are £2.50 each!
Blank disks : 10–£7.00, 50–£33.00.
Disk cleaning kits – £2.50.

All prices are fully inclusive. To order please send a cheque or postal order payable to Pdom PD Amiga or Access & Visa credit card details to:
Pdom PD Amiga ,
1 Bartholomew Road,
Bishop's Stortford,
Hertfordshire, CM23 3TP.
Telephone 0279 757692.

SAUCER

PROGRAM: SIOE-LIN KWIK
FILES: SAUCER, SAUCER.DOC

If you go down to the Workbench today you're sure of a big surprise. For the WIMPs are having a picnic and they've brought their flying Tetley teacups with them. This can only mean one thing: doo do do do, dooo do do do... (deep voice) – You are about to enter the Workbench Hack Zone...

Getting Started

Press F7 from the Coverdisk menu or double-click on SAUCER inside the SAUCER drawer from Workbench. Don't worry if nothing happens immediately, just go about your business. Hint: you can to invite six WIMPs to your party.

PLEASE NOTE: Click the left mouse button when you return to the Coverdisk main menu after installing *Saucer*. If you don't do this, you won't be able to access anything from the menu.

JPDIR

PROGRAM: JONATHAN POTTER
FILES: JPDIR, JPDIR.DOC, JPDIR.SETUP

With *JPDir* you can access the more frequently-used CLI commands from a friendly Intuition environment. This power does, however, mean you can seriously damage your disk or the files on it if you're not sure what you're doing. Read the extensive documentation before proceeding and make sure you write protect the disk until you know what damage you're about to inflict.

To choose files or directories to operate upon, click on the name in the file window. You may scroll up and down the file window using the slider gadget. The three string gadgets are:

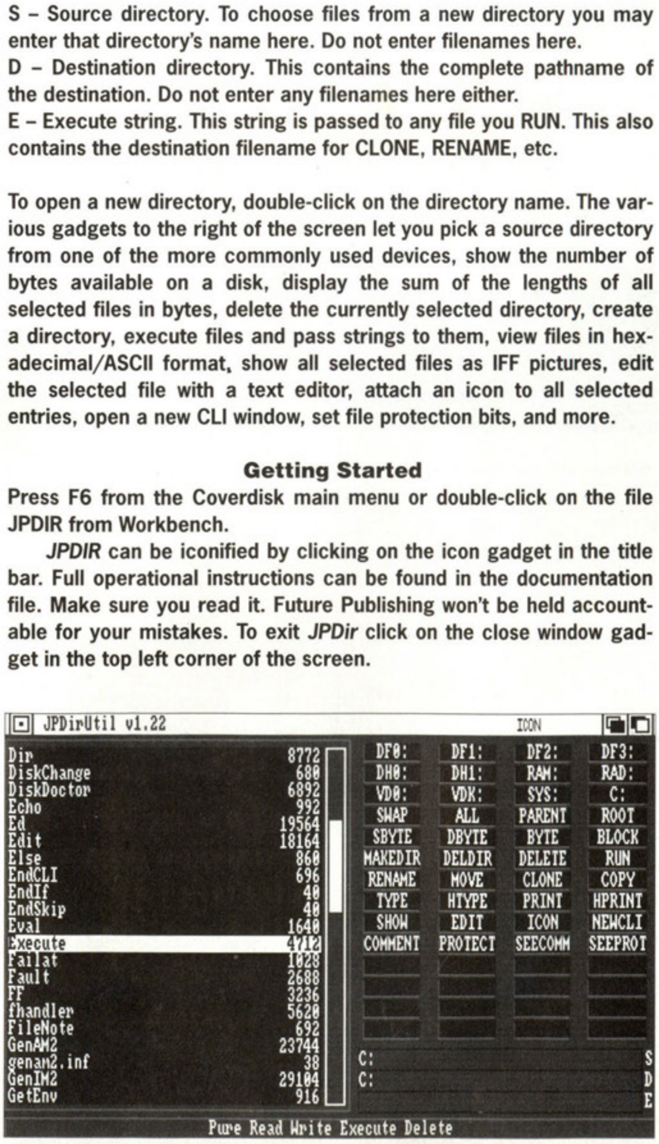
S – Source directory. To choose files from a new directory you may enter that directory's name here. Do not enter filenames here.
D – Destination directory. This contains the complete pathname of the destination. Do not enter any filenames here either.
E – Execute string. This string is passed to any file you RUN. This also contains the destination filename for CLONE, RENAME, etc.

To open a new directory, double-click on the directory name. The various gadgets to the right of the screen let you pick a source directory from one of the more commonly used devices, show the number of bytes available on a disk, display the sum of the lengths of all selected files in bytes, delete the currently selected directory, create a directory, execute files and pass strings to them, view files in hexadecimal/ASCII format, show all selected files as IFF pictures, edit the selected file with a text editor, attach an icon to all selected entries, open a new CLI window, set file protection bits, and more.

Getting Started

Press F6 from the Coverdisk main menu or double-click on the file JPDIR from Workbench.

***JPDIR* can be iconified by clicking on the icon gadget in the title bar. Full operational instructions can be found in the documentation file. Make sure you read it. Future Publishing won't be held accountable for your mistakes. To exit *JPDir* click on the close window gadget in the top left corner of the screen.**

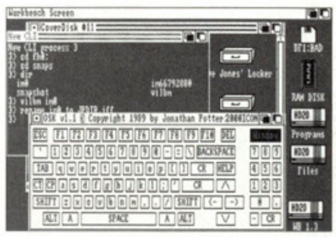


***JPDir* offers much of the CLI's power from the Workbench.**

OSK

PROGRAM: JONATHAN POTTER
FILES: OSK, OSK.DOC

Ever been caught without your keyboard? Ever taken your Amiga somewhere and forgotten your keyboard? Never fear, *OSK* is here. *OSK* (*On-Screen Keyboard,* if you must know) gives you a software keyboard. A pictorial representation of the Amiga 500's, 2000's or 1000's keyboard is shown on the screen, and each of the keys is displayed as a gadget. *OSK* grabs the window that was active before it was run and sends all key presses to it.


It's possible to trigger a reset from OSK. Click on the CT, A and A buttons so that they are all highlighted. Then click on ESC.

Getting Started

Stab F9 from the Coverdisk's main menu. Alternatively double-click on OSK (inside the OSK drawer) from Workbench. To press a key, click on its gadget. The modifiers CONTROL, CAPS LOCK, SHIFT, ALT and AMIGA are available – click once to turn on, and again to turn off.

To send key strokes to a different window, click on the Window gadget in the top right corner. *OSK* waits for you to click the left mouse button again. Simply click on the window you wish to send key strokes to.

You can iconify *OSK* by clicking on the Icon gadget in the title bar. To de-iconify *OSK,* double-click on the icon.

STAR-BLANKER

PROGRAM: CHRIS BAILEY
FILES: BLANKER, BLANKER.DOC

StarBlanker is a screen blanker, pure and simple. It helps you avoid monitor burn-in should you leave your computer displaying the same image for lengthy periods. If no keyboard or mouse activity occurs for a specific time, the display will shake its stuff until you press a key or move the mouse.

Instead of just making the screen black like many screen blankers, *StarBlanker* replaces your display with one of two scrolling starfields. *StarBlanker* chooses which starfield to blank the screen with at random.

Getting Started

Press F8 from the Coverdisk main menu or, preferably, double-click on BLANKER (in the BLANKER drawer) from Workbench.

StarBlanker needs one number from you before it can start. It needs to know how many seconds of zero activity need to pass before the starfield display pops up. *StarBlanker* is set with a time-out of 10 seconds, but you'll only see its effects from Workbench.

To alter *StarBlanker's* timer highlight the icon by single-clicking on it. Click on the Info option in the Workbench menu: you'll notice the heading TOOL TYPES followed by the expression TIMEOUT=10. Change the value 10 to anything above that number. The value represents the number of seconds that must pass before *StarBlanker* comes into effect.

The easiest way to de-install *StarBlanker* is to run the program a second time. This key combination will also remove *StarBlanker:* right Shift, right ALT and X.

DAVE JONES' LOCKER

PROGRAM: DAVE JONES
FILES: MENACE, MENACE.DOC, MENACE.S, SHIPS.S, PATHS.S

Everything in Dave Jones' Locker (drawer) goes with the feature on games programming on Page 119. Check the pages out for full details. This month Psygnosis programmer Dave Jones puts together smooth scrolling with alien movement. You can see a nearly-complete game in action!

Getting Started

You can double-click on the MENACE icon from Workbench, or press F3 from the Coverdisk menu, to see the result of combining the scroll with the ship animation and alien flight paths. Click the left mouse button to quit.

All the source for producing and animating the aliens is contained in the assembler source files MENACE.S, PATHS.S and SHIPS.S. By combining these source files it's possible to assemble the complete thing into the compiled demo on this disk. Alternatively you can modify the source to produce something completely different. Use something like Devpac 2 or Argasm to compile the source. ■

USING YOUR FORMAT DISK

IMPORTANT! Before using your *Amiga Format* disk, you should make a back-up of the master disk as soon as possible.

BACKING UP YOUR DISK

For many reasons, it is important to make a backup of the Coverdisk as soon as possible. Copying the disk may sound like a complicated task suitable for techno-buffs only, but it is surprisingly simple provided you read the following instructions carefully:

1. First, turn on your machine and load Workbench. Once the Workbench screen appears and the disk-drive light goes out, remove your Workbench disk and insert our Coverdisk.

2. Next, click once on the Coverdisk icon and then press the right mouse-button and the Workbench menus will appear. Now, while keeping the right mouse-button depressed, move the mouse pointer over to the 'Workbench' heading and a menu will drop down. Move the mouse pointer over the 'duplicate' menu option and then press the left mouse-button.

3. After a few seconds' disk access, the Workbench DiskCopy tool will be loaded and run. Now just follow the on-screen prompts and your *Amiga Format* Coverdisk will be copied to a backup disk. When the machine asks for the destination, insert your blank disk into the drive. Further instructions are in the user's guide that comes with your Amiga.

USING THE PROGRAMS

All programs on the *Amiga Format* disk are specially set up to make them as easy to use as possible. If you can use the Amiga's Workbench then you can use our Coverdisk! If you do have problems with a program, full instructions on loading and using the programs are included in Disk Extra and these should get you up and running. If you still have problems, you should read the documentation file (.DOC) that is included with every program. To run any of the programs on this month's Coverdisk, follow a simple procedure: unless specified differently within Disk Extra, just double-click on the program's icon on the Workbench and it will load and run. Full details on how to use the programs once they have loaded are inc-luded as a documentation (text) file with the program.

To display a documentation file, just double-click on the appropriate .DOC file and a window will open containing the file's contents. Pressing the space bar will advance the text a page at a time.

COPYRIGHT NOTICE

DISK EXTRA HOTLINE

0225 765086
Between 2pm and 6pm on weekdays only

Flummoxed by files? Dumfounded by disks? Paranoid about programs? If you have a problem with the disk – and you're sure the disk is in full working order – phone 0225 765086 with your query. State the model of your machine and anything you've got attached to (or plugged inside) the computer. For problems with disks before Issue 5 phone *Amiga Format* on 0225 442244.

EARN UP TO £800

Name ....
....
Address ....
....
....
Telephone *(Daytime)* ....
(Evenings) ....
My program name is ....
....

Approximate total size of files in kilobytes ....K
(we cannot use programs longer than 200K; shorter submissions, under 100K, stand the best chance of publication). It is a:

- ☐ Game
- ☐ Technical tool
- ☐ Business utility
- ☐ Art program
- ☐ Music program
- ☐ Educational
- ☐ Novelty
- ☐ Other

Brief description ....
....
....
....

Checklist (please tick):

- ☐ Stamped, addressed envelope for return
- ☐ README.DOC explanation file on disk
- ☐ Printout of README.DOC file (if possible)
- ☐ Name, address, machine type written on label
- ☐ Disk certified virus free

IMPORTANT Please sign this declaration:
This program is submitted for publication by *Amiga Format*. It is wholly my own work and I agree to indemnify Future Publishing against any possible legal action should copyright problems arise.

Signed ....
Date ....

IS YOUR DISK FAULTY?

We have done our best to check that the programs on the *Amiga Format* Coverdisk are simple to use, error-free and have no known viruses. However, we cannot normally answer telephone queries on using the software, and we do not accept liability for any consequences of using the programs on the disk.

If your *Amiga Format* disk is faulty – and out of the tens of thousands duplicated, some are unfortunately bound to be – you should send it back for a free replacement within a month of the cover date to:

Amiga Format
June Disk
Discopy Labs
Unit A, West March,
London Road, Daventry
Northants NN11 4SA.

If your Amiga refuses to accept the disk, try using the DISK-DOCTOR utility on your Workbench disk to rescue it before sending it off for a replacement. Full details of *DiskDoctor* can be found in the user's manual that came with your machine.

WE WANT YOUR PROGRAM

If you've got any programs for the Amiga which you think other readers would find useful, interesting or amusing, we'd very much like to know about them.
1. Make sure your program is foolproof to use. 2. Create a file called README.DOC on the disk which explains exactly how to use your program. 3. Fill in this form, sign it, and send it without delay to: Coverdisk Software, *Amiga Format,* 30 Monmouth Street, BATH BA1 2AP. You could win a share of up to £800 prize money for the best programs each month.

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- ★ Disk support: internal 3.5" external 3.5" external 5 $^1/_4$" drive. (Software-upgrade to H/D A590 in pipeline)
- ★ Including MS DOS 4.01, MS DOS shell and GW Basic (market value approx £130.00)
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- ★ Further exciting software upgrades in the pipeline
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- ★ OK with TV. No special monitor required
- ★ Price: **£320.00 including VAT. Postage in UK £4.00 Total £324.00. Access and Visa accepted.**
- ★ For export price please contact us
- ★ Trade enquiries welcome (UK - Scandinavia - Australia/NZ and all English language.)

First deliveries expected in May. Place your order now and get into the queue. Don't send any money yet. We will contact you when we are ready to ship.

Although we aim for maximum compatibility, we cannot guarantee it, so if your purchase depends on a particular program, please ask us first or send in a copy of the program. (With suitable S.A.E if to be returned). Price subject to change without notice.

BDL

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THE WHOLE TRUTH ABOUT games programming PART 5

aliens 2



As we get close to the complete *Menace*, **DAVE JONES** fills in the details of how to animate aliens.

Following straight on from last month's ramblings about the features required by the alien movement routine, this month's Coverdisk contains the source code that implements all the functions discussed last time. It is quite lengthy – lucky you dont have to type it in! – and consists of three main sections:

1. The control of aliens in a path.
2. The starting/stopping of paths.
3. Drawing the aliens in each path.

The drawing of the aliens is broken down into three further stages:

1. The replacing of backgrounds saved from the previous printing of the aliens.
2. The saving of the backgrounds where the next set of aliens is to be drawn.
3. The actual drawing of the next set of aliens.

Big Clipper

Note that no clipping of BOBs (Blitter OBjects) is carried out in *Menace*. Clipping, a very common feature in games, ensures objects move smoothly onto the screen from the borders rather than just instantly appearing. The aliens in *Menace* do not appear instantly, though, so you may have realised that some form of clipping must be taking place.

The simplest way to achieve a clipping effect is to make the physical screen size larger than the one that is being displayed. In *Menace* all aliens are a maximum size of 32x24 pixels. If this area is added to each side of the displayed screen size it gives us an area of the screen into which we can draw an alien that will not be displayed (see Figure Two). Once we start moving the alien onto the screen it will glide smoothly on.

Once again, the trade-off between speed and memory comes into play. We can keep the screen the same size as the displayed one and use software to calculate how much of the alien is clipped, only drawing the correct amount, or we can sacrifice the extra memory to dispense with the software clipping. In some games it becomes essential to use a software clip. Basically if you plan on having large moving objects in a game, then there will probably not be enough memory to allow the extra screen size around the displyed screen to accomodate and hide large objects.

Blitter Pill

The aliens are drawn using the blitter (surprise, surprise). The blitter is much, much faster than using the 68000 to move memory around – even small bits of memory – and let nobody try to tell you different, especially ST owners. Blitter sprites are masked, shifted and drawn in one operation for each plane (three planes in all).

The graphic data is stored in the most common way for blitter data. This is each plane of graphic data stored sequentially in memory, with a plane of mask data last. The mask is simply all the planes of data ORed together. The mask is used to 'cut' out of the screen the pixels where some data from the BOB has to be placed. Without this, the pixels that are there affect the BOB data resulting in the wrong colours appearing.

Alien stored as:

Plane 1 4 bytes x 24 scanlines = 96 bytes

Plane 2 4 bytes x 24 scanlines = 96 bytes

Plane 3 4 bytes x 24 scanlines = 96 bytes

Mask 4 bytes x 24 scanlines = 96 bytes

Total = 384 bytes per anim

To draw an alien BOB requires three separate blits, one for each plane of the screen we are drawing into. All four blitter channels are used and are assigned to:

Blitter A channel = mask
Blitter B channel = data
Blitter C channel = screen
Blitter D channel = screen

Two channels point to the screen data as the screen is used as both a SOURCE and a DESTINATION channel. The blitter is used to perform the function of ANDing a

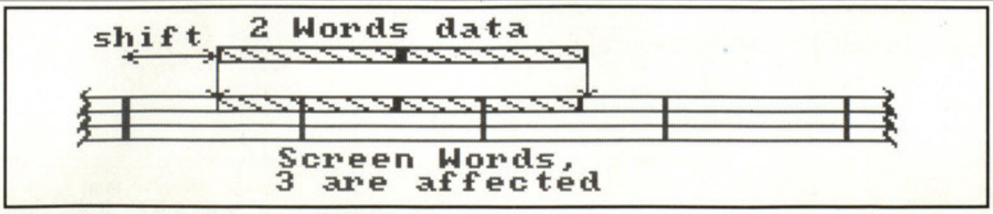
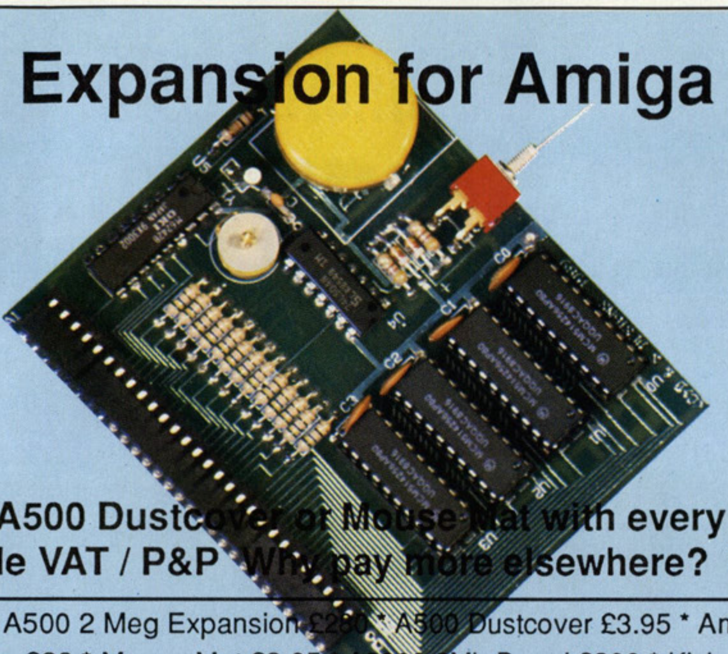


Figure 1

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word from the screen with the inverse of the mask word and then ORing the data into the result. This function first removes the data from the screen where the mask has >1 bits present, then draws the data into these bits. This is performed for all three planes. The one mask is applied to all planes but the data for each plane is, of course, different.

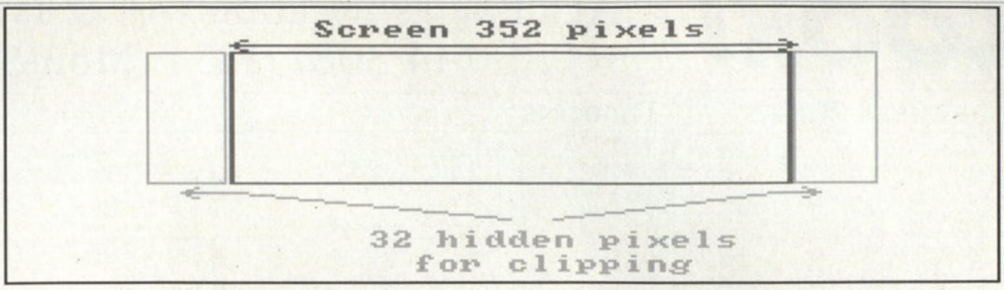


Figure 2

Shift Work

The shifting operation incorporates a neat little solution to a problem that many people have asked me how to get around. If a 32-pixel wide BOB is to be drawn onto the screen with the blitter, then we would tell the blitter it is two words wide by however deep. This is ONLY true if the BOB is not shifted: ie its X position is a multiple of 16 pixels (or an even number of bytes).

As soon as we want to place a BOB on ANY pixel position we will be affecting THREE words in length on the screen (see Figure One). This is due to the fact that we must use the blitter to shift the BOB right as it draws it into the screen. The common solution most people use is to store their graphics with an extra word at the end of each scanline: ie aliens in *Menace* would be stored as 48x24 pixels in size. This extra word is for the blitter to shift the data into: a maximum shift of 15 is needed.

Note that the the blitter width when drawing shifted BOBs is always one word greater than the actual BOB width to accommodate for the shift. This overhead obviously increases the memory required to store all the BOBs you may have to store (unless they do not require to be shifted as in character sets). There is indeed a way the blitter can handle this, although not documented in the hardware reference manual.

The basic aim of the problem is to give the blitter an extra word of zero at the end of each scanline, but still manage to store the BOB at only 32 pixels wide. Now, if we do store the BOB only 32 pixels wide but blit on the 48 pixels required what will happen is that some extra data will appear on each scanline where the BOB is drawn. This will be data from the next scanline down in the BOB due to the blitter fetching this extra word. In effect, the LAST WORD of the scanline will contain data and not zeroes.

However, the LAST WORD should ring a bell when we are talking about the blitter as the blitter has a feature called first and last word masks for its A channel. Normally these each have the value $FFFF, which masks off no data in the blit (the first word in the A channel blit is ANDed with the blitter A first word mask, and similiarly the last word in the A channel blit is ANDed with the blitter A last word mask). If, however, we set the last word mask for channel A to $0000, and assign channel A as our mask channel (ie channel A will point to the mask for each plane blit) then the extra word of data picked up by the blitter will be ANDed with the word $0000 which will force the data to be zero. This then gives us the desired effect of having a zero word at the end of each scanline of data.

One small side effect still remains, though, in that the blitter has fetched an extra word of data for the BOB, this data coming from the next scanline down in the BOB data. We therefore have to change the MODULO for the mask & data channel to a value of –2. The modulo is simply a value added to the blitter pointer at the end of each scanline. This would normally be zero if the data was arranged sequentially, but because we have fetched an extra word of data, we have to pull back the blitter pointer to that extra word otherwise every subsequent line of data would be out by 2,4,6... bytes of data. So to summarise:

1. Data is stored sequentially as Plane 1, Plane 2, Plane 3, Mask
2. The exact size (4 bytes x 24 scanlines) only is stored
3. Blitter channel A will point to the mask for each blit
4. Blitter channel B will point in turn to each plane of data
5. Blitter channels C & D will point in turn to each screen plane

The width of the blit will be 3 words, as the data is only 2 words wide the last word will be masked to 0, and the modulo will be –2 for the mask and data channel

The modulo for the channels C and D is the width of the screen minus the width of the blit.

Having a bliter to handle most of the drawing of objects is really a godsend on the Amiga. Try switching to a machine that has no hardware support for drawing, where you rely only on the processor, and you are immediately faced with many problems and compromises in trying to achieve what the blitter can handle.

This is one of the reasons why Amiga games can be exactly the same as an ST version if it was developed first. Porting a game from the ST to the Amiga can usually be done in a matter of days with no problems. Take a game written for the Amiga, though, that makes heavy use of the blitter, and you will need some major rewriting of code. This is the main reason why people tend not to make full use of the Amiga hardware when designing and writing a game for both 16-bit machines.

Back on the Path

Now back to the path movement control that was discussed last month. The final bit to explain was how the commands are actually defined as data. The file 'paths.s' on this month's Coverdisk contains the data for all the paths for Level One of *Menace*. All the paths were designed and entered by hand. This is not the ideal way to do things, some form of path editor would have been better, but if it's your first game you are writing you tend not to be too ambitious. It's best to concentrate on actually finishing a game!

A single path starts with the definitation data exactly as described in last month's structure. This describes the speed, animations, etc.

Following this is the movement data. We basically had two types of data:

1. A coordinate pair which were relative or absolute.
2. A command byte with optional parameters.

Looking at the coordinates first, we must decide upon the maximum values these can be. For relative coordinates a limit of +/- 16 would suffice. For absolute coordinates we have to look at the screen size to determine the limits. Basically the minimum X & Y will be 0,0 . The screen is 352 pixels wide, but 32 pixels are added to the left and right for the clipping as described. This gives us a maximum X,Y of 384,168 (note the x,y coordinate defines the upper left of the BOB, so although the screen is 192 pixels high the maximum Y is 192-24 = 168).

The BOBs are not clipped at all on the Y coordinate as they appear behind the foreground on the dual playfield screen. Thus the border graphics that are always present top and bottom hide the fact that BOBs can suddenly appear at the top or bottom. From the maximum values we see that the Y coordinate would fit in a byte but the X coordinate would need a word to hold any value. To save memory and keep both coordinates the same it was wise to store the absolute coordinates divided by two. This imposes a slight restriction in that only even coordinates are allowed, but this is never noticeable. We can now store the x,y absolute or relative coordinates in a byte with a value from –16 ($f0) to 192 ($c0).

Illegalities

As there are some values that are illegal when it comes to the coordinates ($c1 to $ef) we can embed the control commands discussed last month into the coordinates to further save memory. A maximum of 16 commands were allowed and these were assigned the values $e0 to $ef. The flow was then along the lines of:

Fetch the X,Y coordinate bytes
If X bytes is in the range $E0 – $EF then execute a control command
else if the offset mode bit is set the coordinates are relative and are added to X,Y
else the coordinates should be advanced towards.

And that is basically that. This month's source implements this form of control, the data being acted upon is in the file 'paths.s'. It is very simple to try changing the coordinates and commands to form your own paths. ■

Next month will see the game becoming playable with the firing and collision detection routines added so at last you can blast and be blasted!

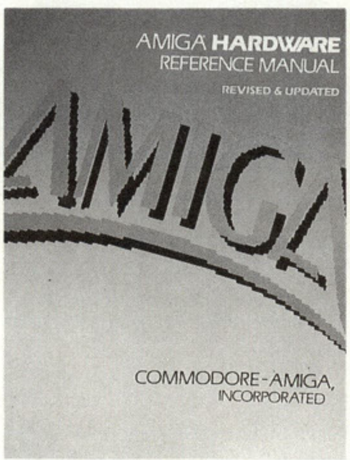
Books Bonanza

Even the most learned amongst us need a good book occasionally. **JASON HOLBORN** puts on his spectacles and searches for ultimate knowledge.

We would all like to be top programmers, but there's one thing that stops us – Amiga programming is *soooo* difficult! OK, so programming in AmigaBASIC is pretty simple to get started with: but once you start delving into the Amiga's darker regions, things start to get rather hairy. All those pointers and structures can be bad for your health unless you're equiped with the programmer's best friend – a good reference manual.

The Amiga certainly isn't short of its fair share of programming books – if you can think of a particular area of Amiga programming, chances are that someone has written a book about it. Whether it's getting down to serious programming with Intuition and Exec or 'bashing the metal' in assembler, you're bound to find a book to suit your needs.

It's been a while since we took an in-depth look at the latest books for programming boffins, so here's a rundown of the latest arrivals. Once again, Abacus have increased their domination of the Amiga books market with the released of two new titles to add to their already impressive range, but Compute! publications are hot on their heels with three new releases. Meanwhile, Addison-Wesley, publishers of the official Commodore Amiga documentation, have released the updated version of the acclaimed Amiga bible, the Hardware Reference Manual. All this within the space of one month!

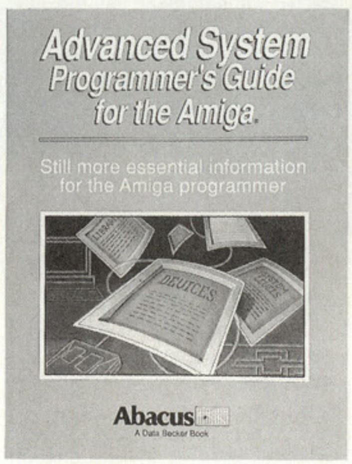


HARDWARE REFERENCE MANUAL

THE Amiga hardware programming book is back, and this time it's brought with it a whole host of new information and a spanking new designer cover (gone is the hideous purple and white of the original!)

Surely not a single Amiga programmer worth his salt has failed to hear of what must be the most important reference material for the Amiga. Operating system programmers have an excuse for not owning this book, but a hardware programmer without Addison-Wesley's book is like an Amiga without a monitor!

The Hardware Reference Manual is the definitive source of information on the Amiga custom chips and peripheral interfaces. If you're a programmer who wishes to control the Amiga hardware directly, this book is a definite must.



This latest release has been updated for Version 1.3 of the Amiga operating system, to cover the new Amigas (the original Hardware Manual covered the A1000 only) and to correct a couple of mistakes that cropped up in the original release. The book provides an in-depth description of copper, blitter, playfield hardware, sprites, audio, system control and interface hardware.

New additions to the manual include a tutorial on writing safe, upwardly-compatible software (are Commodore trying to tell us something!) The Hardware Reference Manual is the definitive documentation of the Amiga hardware. If you intend programming the Amiga at such a low level, this book is a necessity.

ADVANCED SYSTEM PROGRAMMERS GUIDE

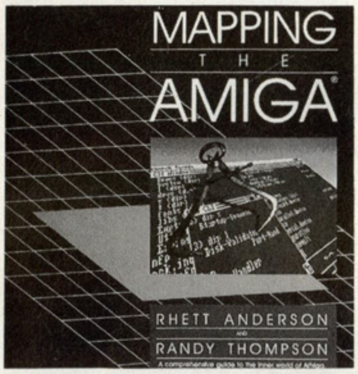
Although Addison-Wesley's Amiga Hardware Reference Manual is generally looked upon as the bible of hardware programming, Abacus' Amiga System Programmers Guide has been hot on its heels for the position of number one reference book for games programmers.

Unlike the Hardware Reference Manual, Abacus' book also documents many areas of the Amiga systems software. This latest publication takes over where the first volume stopped with a look at the intricate aspects of the Amiga operating system including extras added to the OS with the release of 1.3 Kickstart and Workbench. The book includes sections on the Amiga interfaces (audio, video, RGB, parallel, serial, expansion etc), Exec structures (nodes, lists, libraries and tasks), Multitasking (task switching, intertask communications, exceptions, traps and memory management), I/O (device handling and requests) and devices (trackdisk, console, narrator, gameport etc).

If you're a programmer who uses the Amiga operating system extensively, then this latest release from Abacus will prove an invaluable addition to your reference material. In contrast to the official documentation, Abacus have managed to document

some of the most complex aspects of the Amiga in a crystal-clear form. Once again, Abacus have produced another classic that is a must for every Amiga programmer.

MAPPING THE AMIGA



Compute! Publications boldy claim that their latest title is something pretty special. As they claim, Mapping the Amiga isn't just another programming book for the Amiga, it provides the most in-depth reference material on the Amiga systems software and hardware that has ever existed (ever!)

The first thing to establish is that Mapping the Amiga is a reference book only – it is not designed to teach you the 'ins and outs' of the operating system. Mapping the Amiga is therefore for the experienced Amiga programmer. If you fall into this catagory, then read on.

The book provides a complete listing of the Amiga function calls and system structures. Each library function is listed with with a description of its use, which library it can be found in, its library offset, syntax in C, Assembler and Modula-2, parameters and return values. What more could you possibly ask for?

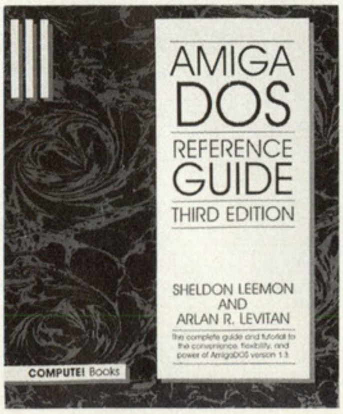
As if this wasn't enough, the book also provides one of the most complete and comprehensive listings of all the Amiga hardware registers. Each and every register is listed complete with an in-depth description of its use. This section alone makes this book an invaluable addition to your reference material.

So are Compute! going a bit over the top by claiming that Mapping the Amiga is the 'be all and end all' of Amiga books? After just a quick flick through you'll soon come to realise that this is no idle claim: Mapping The Amiga is probably one of the most useful reference materials available.

AMIGADOS REFERENCE MANUAL

Enough of the programming books, here's a book that will be of interest to all Amiga owners. If you've ever wished to learn the intricacies of the Amiga's Command Line Interface, then a good book is what you need. So many exist on the subject that picking the one that is best suited to your needs can be a confusing and often frustrating process.

Rather than being a new release, Compute!'s latest publication is a revised version of their popular AmigaDOS reference book that has been updated to include all additions to AmigaDOS with the release of 1.3 of the operating system (took their time, didn't they!)



As well as the usual run-down of what each AmigaDOS command does, topics covered include creating command-sequence files to automate almost any task, from editing the StartUp-Sequence to writing complex batch files. All the standard DOS operations that you need to know about are covered, including copying and delete files, creating directories, using the RAM disk and getting the most from the two AmigaDOS editors, Ed and Edit.

If you already own an AmigaDOS reference book, this latest release isn't really worth the extra cash – you'll find very little that is genuinely new. However, if you would like to harness the power of AmigaDOS, then Compute!'s new book is well worth investigating. ■

DESKTOP VIDEO HEAD TO HEAD

We've all heard of it, but very few of us have actually got the slightest idea what it's about. Yep folks, we're talking Desktop Video. So what is Desktop Video? To most of us it means one thing – video titling. But as anyone who is involved in the video industry will tell you, there's a lot more to it than just adding static titles to your home videos.

Just arrived are two new books that promise to impart to you everything you would ever need to know to get started in Desktop Video. Here's how they compare.

AMIGA DESKTOP VIDEO GUIDE

For all you frustrated Amiga video enthusiasts, Abacus' latest book could be the answer. The book provides an in-depth look at the basics of video, videotape equipment, video/Amiga interfaces, software, hardware and much more. Whether you simply intend to add ttiles to your holiday videos or you're hoping to give Steven Spielberg a run for his money, this book is a must.

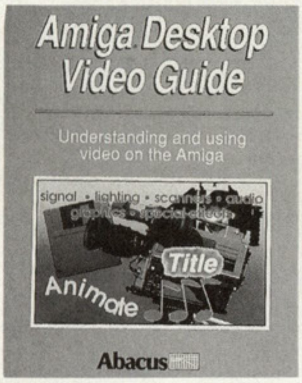
Topics covered include genlocks, digitising and scanning, video recorders and cameras, paint and animation programs, special effects, home techniques and professional video techniques.

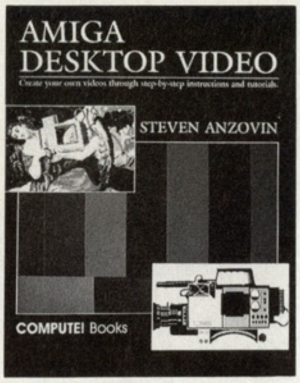
Abacus' book is undoubtedly best suited to the home enthusiast. It provides much of the information needed to get started without falling into the trap of becoming too technical – it's all very well talking about the structure of a video signal, but most of us will find this about as useful as a hair dryer in a hurricane.

AMIGA DESKTOP VIDEO

Videophiles are certainly starting to be spoilt for choice with the release of Compute!'s entry into the Amiga DTV market. The book, which was written by Steven Anzovin (who also wrote the incredibly popular titles Speeches of the American Presidents and It Hurts: A Parent's Guide to Children's Needs), acts as an introduction to the fascinating world of Desktop Video on the good old Amiga.

Subjects covered include the use of colour, creating animation, combining audio and video, composing Amiga music and creating 3D graphics. Want to know about things like colour reference bursts and vertical synchronising pulses? For the techies among you who enjoy torturing yourselves with such things, the book provides an in-depth look at the technical side of video production including a breakdown of video signals and the like. The only disadvantage of this technical section is the fact that it is geared towards the American NTSC video standard – which isn't really a great deal of use to us PAL people on this side of the Atlantic Ocean.





PRICES

All the books included within this feature (and more) are available from Adamsoft on 0706 524304.

Hardware Reference Manual
Addison-Wesley £21.95

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Part Two: Spreadsheets

In the second part of his series **MARK SMIDDY** examines jack of all trades and master of several, the Spreadsheet.

In the PC world the name *Lotus 1-2-3* is synonymous with the spreadsheet. Spreadsheets are not a new idea and *Lotus* was not the first spreadsheet, but by virtue of its power, not to mention some clever marketing, it has become a standard. A standard by which all spreadsheets are judged: a standard so popular that several Amiga packages boast compatibility with it.

But what exactly is a spreadsheet and why do people spend hours tinkering with them? Collins' English Dictionary defines a spreadsheet as "a computer program that allows easy entry and manipulation of text and formulae, used especially for financial planning and budgeting." While this sums up the main uses, it does little to describe how spreadsheets work – and how powerful modern variants are.

The Mechanics

Early spreadsheets were devised to assist with financial planning, so their design closely follows that of a bare sheet used for cashflow projections and profit forecasting. A simple cashflow is defined as follows:

1 Draw a grid consisting of 40-50 rows and 15-20 columns.
2 Along the top row fill in twelve months of the fiscal year.
3 Down the left-hand column make a list of items creating income, followed by items of expenditure, leaving two blank rows for headings and results.
4 For the twelve months fill the projected amount expected to be earned by or expended on each.
5 For each month, add together all items of income and enter this below the list of incomes. Call this figure A.
6 Do the same with the expenditures. Call this figure B.
7 For the first month subtract "B" from "A" (income over expenditure) and call the result "C" (balance carried over).
8 For the rest of the year calculate "A-B" and add result "C" from the previous month.
9 At the end of each month and the end of the year, the result shows the projected gain or loss.

It is easy to see that calculating even a simple cashflow analysis can involve hundreds of calculations before arriving at an end result: and a small change in a single figure can mean the entire sheet has to be recalculated. This is a time-consuming business, especially when the forecast has to take into account many variables: market trends, regional sales variations, interest rates etc.

This is where spreadsheets come in. Computers are brilliant number-crunchers and cashflow forecasts represent an everyday business problem. Using a spreadsheet, a businessman can accurately predict what will



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be happening to his profit margins in one, two or more years' time. Variables, such as interest rates, can be adjusted at any point and the entire sheet recalculated in a matter of seconds instead of the hours associated with the manual system. Correct use of cashflows can prevent bankruptcy or insolvency by helping to identify possible problems before they arise.

This cashflow example is a basic function: modern spreadsheets are capable of much more. More powerful Amiga packages now incorporate facilities for simple database applications, word processing and, more recently, project planning. Also, following the cliche "a picture tells a thousand words," most packages have the ability to produce graphs based on worksheet data.

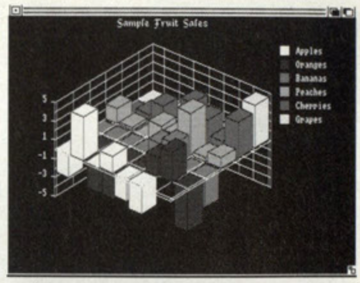
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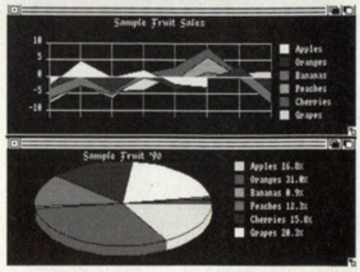
FAR RIGHT: Even multiple graphs are possible in *Analyse*...

FAR RIGHT: ...but 3D Bar charts are just as impressive.

comes on a single disk accompanied by manual and crib card, all housed in a large plastic box.

This is a basic package which makes do with an absolute minimum of functions, but is nevertheless quite capable of performing simple operations. Straightforward problems such as cashflow projections can be programmed quickly with the minimum of fuss. More complex financial, scientific and statistical forecasts are beyond its limited features, however. *DGCalc* falls down on its lack of graphics. At the price, one should reasonably expect a simple pie or bar chart to accompany data – no such facility is provided. Cavils aside, *DGCalc* is ideal for beginners although most users will quickly outgrow it.





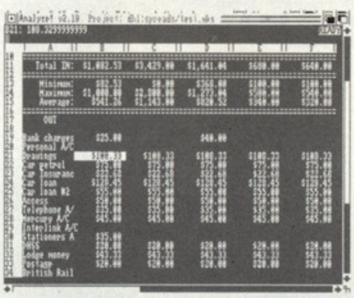
ANALYSE 2
Micro Systems Software
£49.95

Has now joined several bundles, such as *The Works,* but can still be bought separately from some suppliers. Although qualifying as budget software, *Analyse* has some excellent – if at times quirky – facilities. Of the budget packages it is the only one capable of loading and saving *Lotus 1-2-3* WKS files. The similarity with *Lotus* goes even further, since *Analyse* can be controlled through similar sets of slash commands and a macro language which includes the '/0' auto-execute macro. This is in addition to the normal pop-down menus supplied by Intuition, making the package instantly useable for those who are accustomed to other Amiga or PC spreadsheets.

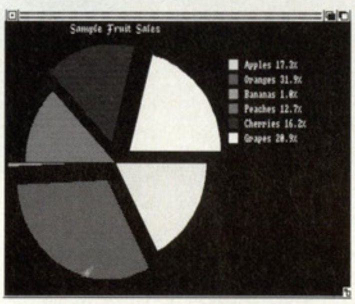
Making *Analyse* unique among the budget systems is its ability to plot a wide range of graphs, in either 4 or 8 colours, as well as saving to an IFF file. In itself this makes the package a real pleasure to use. The addition of slash commands ensures that – once the necessary keystrokes have been mastered – accessing any feature is very easy. This is echoed throughout the package, which was one of the slickest performers overall regardless of price. Similarly, macro programming – based around the slash commands – is a breeze once learned; and help is always available.

Since *Analyse* is now supplied with *The Works* (price £99.99) and can freely exchange data with other packages supplied therein it is very

RIGHT: That *Lotus* clone cashflow in *Analyse*.



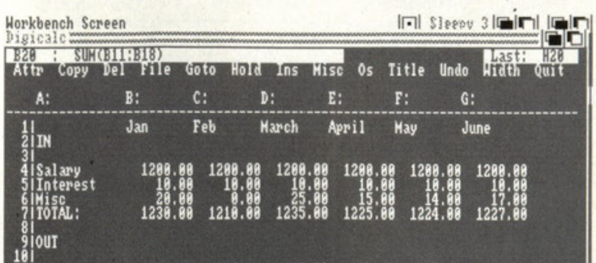
RIGHT: This *Analyse* 2D pie shows exploding segments.



DG CALC
Digita International
£39.95

Digita International's offering has the distinction of being the cheapest (and therefore the simplest) commercially available Amiga Spreadsheet. There is at least one offering in the Public Domain but it lacks the documentation necessary to make it worth further discussion. Curiously, this is where *DGCalc* scores most highly considering it is ostensibly a very limited package. The 40-page manual covers every aspect of the software. Perfect reading for beginners, it has good coverage of the all-important and frequently-overlooked subject of backups. *DGCalc* itself

BELOW: DGCalc shows off its capabilities.


Workbench Screen
Digicalc
B20 : SUM(B11:B18) Last: H20
Attr Copy Del File Goto Hold Ins Misc Os Title Undo Width Quit

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17	Loans	200.00	200.00	200.00	200.00	200.00	200.00
18	Access	50.00	50.00	50.00	50.00	50.00	50.00
19							
20	TOTAL:	775.00	720.00	720.00	720.00	700.00	700.00

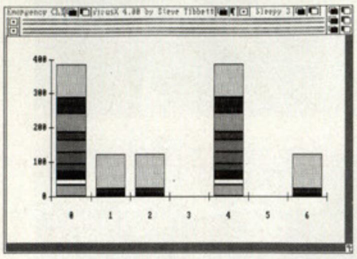
3.Digita:DEMO>

3D, OR NOT 3D?

That is the question. . . Whether 'tis nobler in the mind to suffer the slings and arrows of outrageous macro programming examples or to create worksheets as multi-dimensional matrices? Some spreadsheet packages provide functions to perform multi-sheet calculations. That is, functions in worksheet A refer to cells in worksheet B and vice versa. This may sound bizarre initially, but it can prove useful.

To take a simple example – imagine two sheets which describe 1) a Profit and Loss account and 2) a cashflow; both for the same company. While these sheets are inter-related, it may be necessary to keep them separate. For instance, several, totally different, cashflows could all be accessed by the same Profit and Loss account: to resolve the values in a worksheet, a special function accesses relevant cells in the other sheets.

hard to beat. Although it lacks sideways printing this is compensated by the *Platinum Works* bundle which does incorporate a utility for that very same purpose.

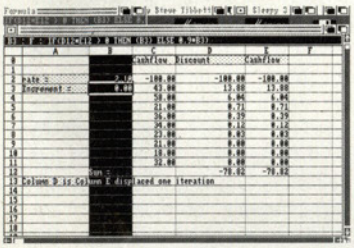


LEFT: ***K-Spread*** **displaying a simple stacked bar chart.**

K-SPREAD
Kuma £59.95

Another entry-level spreadsheet pitched at the same market as *DGCalc*. For slightly more money it offers far more features, at least a token offering of graphics capability, and more comprehensive documentation.

A SERIOUS BUSINESS

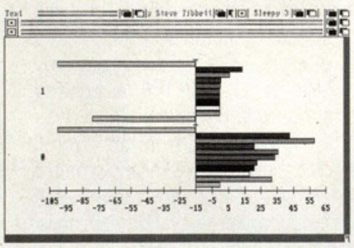


LEFT: The ***K-Spread*** **debugger in action!**

FAR RIGHT: A database running under ***Maxiplan*** **– the function selector can be clearly seen.**

RIGHT: Two typical high-low charts in ***Maxiplan.***

tion. Like most of Kuma's business products *K-Spread* has a distinctive look about it – just like a GEM implementation on the ST. This can be viewed as either a plus or a minus depending on personal opinion – GEM is widely used on the PC and professional users tend to feel more at home with it than Intuition.



LEFT: Bar charts are quite simple to plan in ***K-Spread.***

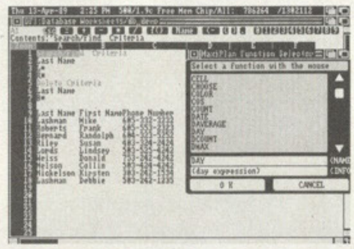
Manipulation of the spreadsheet is very easy since most operations are fully mouse-controlled. Large areas of the sheet can be selected by "dragging" to mark an area. Marked areas can then be copied as easily as moving an icon on the Workbench, or submitted to the graphics operations. *K-Spread 2* only supports three different graph types although bar charts can be orientated horizontally or vertically.

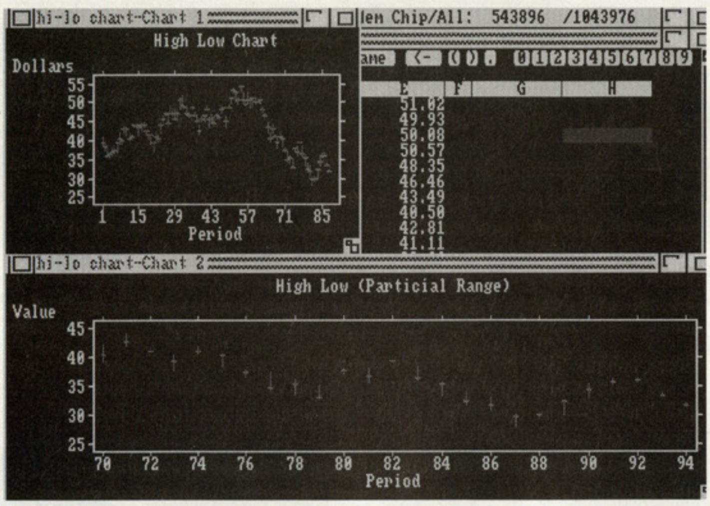
At the price, *K-Spread 2* affords good value for money and a businesslike feel. Although it does not support *Lotus* WKS files it can load and save in Data Interchange Format (DIF) making it compatible with other Kuma products. Also graphs can be saved as IFF pictures for import into graphics and DTP packages. An unusual feature is its ability to print large worksheets sideways on Epson compatible printers, neatly avoiding an all-too-common problem. Extensive debugging facilities are further clever features of the package which belie its low price.

OVER £100 SOFTWARE

MAXIPLAN PLUS
Intuitive Technologies
Price N/A

Chosen by Commodore for inclusion in their Amiga Education bundle, this software might be expected to be lacking in power or facilities. Nothing could be further from the truth, although it must be stated from the outset that *MaxiPlan* lacks the

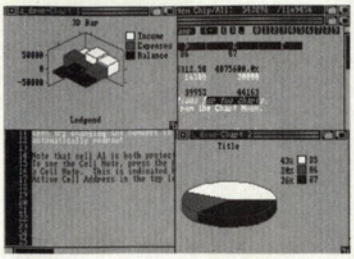




QUICKVIEW – PRODUCTS LISTED

Product:	Max Columns:	Max Rows:	Graph Types:	Functions:	Macros:	Database	Lotus In/Out:	3D Worksheets:
DGCalc	52	512	None	>15	No	No	No	No
Analyse 2	256	8,192	A,B,P,L,S,X.3	>40	Yes	Yes	WKS	No
K-Spread 2	256	8,192	B,L,St	>40	Yes	Yes	No	No
Advantage	65,000	65,000	A,B,H,P,S,St,X.3	>80	Yes	Yes	WKS	Yes
SuperPlan	1,024	2,048	A,B,G,H,L,P,S,St,X	>70	Yes	Yes	WKS,WK1,WRK	No
MaxiPlan Plus	512	32,760	A,B,H,P,S,St,X.3	>70	Yes	Yes	WKS (Import)	Yes
Plan IT 3.0	512	32,760	A,B,G,H,L,P,S,St,X.3	>70	Yes	Yes	WKS,WK1	Yes
K-Spread 3	256	8,192	A,B,L,S,St.3	>100	Yes	Yes	WKS,WK1,WRK	Yes

KEY: A=Area B=Bar G=Gantt H=High-Low L=Line P=Pie S=Stacked Bar St=Step X=Scatter (X-Y) 3=3d option available in some charts WKS, WK1=Lotus 1-2-3 Worksheets WRK=Lotus Symphony worksheets



ABOVE: *Maxiplan's* 3D charts can be scaled to suit requirements.

stability necessary for an educational environment: graphics operations in particular are very prone to gurus. Also, although supplied on a single disk, the package has to be copied onto two disks in order to function – the installation scripts provided did not work correctly.

Once installed, *MaxiPlan* demonstrates that it is one of the most powerful and flexible spreadsheets available. Certainly a lot of thought has been put into the user interface. For instance, the non-standard file selector does not display a list of files until requested. Therefore a complete path can be specified before AmigaDOS starts the business of ruminating over the disk.

Another feature unique to it (and its successor *Plan/IT*) is the zoom mode. This facility allows viewing and movement around a vast area of a worksheet by "zooming" the view out. Cells containing values, formulae, text and so on now appear as coloured bars – to move simply click the required cell and normalise the display. *MaxiPlan* is the lazy typist's dream: every conceivable function, with the exception of text, can be entered without ever even touching the keyboard.

PLAN/IT 3.0 Intuitive Technologies Price N/A

At the time of writing *Plan/IT* is the subject of an American legal wrangle which stems from its links with *MaxiPlan*. *Plan/IT* is a vastly improved and more stable version of *MaxiPlan* but carries a different name because Intuitive Technologies changed publishers. Until this problem is resolved, *Plan/IT* (*MaxiPlan 3?*) will continue to be unavailable.

Features added to those of *MaxiPlan Plus* include minimum recalculation, log scales on line, bar and XY charts, print previewing, interpolation line for scatter charts, and Gantt charts for project management. There have also been a number of internal changes to make the program more efficient overall. Two other new features are worth further explanation since they are unique to *Plan/IT:* Outlining and Dataview.

Outlining is a new idea for assisting with worksheet presentation. The idea is, some rows in a spreadsheet are more important than others in

MACRO BIOTICS

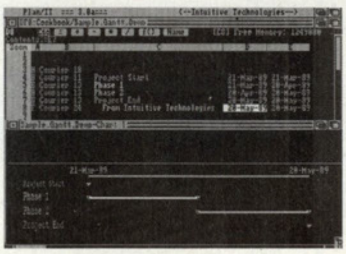
Most spreadsheets support some form of macro language – the commands vary in implementation but essentially do the same job. Macro languages tend to be simple and the tasks split roughly into three groups.

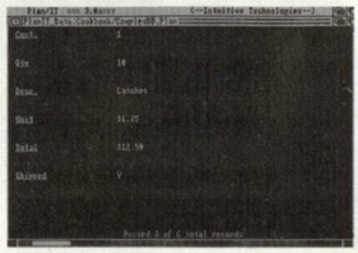
1) Movement commands: tasks normally provided by the keyboard

2) Menu commands: accessing features of the package usually accessed via the menus.

3) Worksheet functions: functions like conditional tests which can only be performed inside the worksheet.

The first two options are often implemented through a "keystroke recorder" where every key pressed is recorded as part of the macro. The third is peculiar to packages with proper macro commands. Many support both methods. The advantage of "keystroke recording" being, often used key sequences can be assigned to a single keypress. The advanced facilities afforded by macro languages allow experienced users the ability to tailor an application to their own needs; beginners frequently

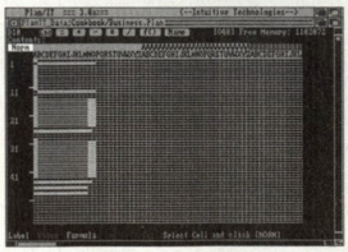


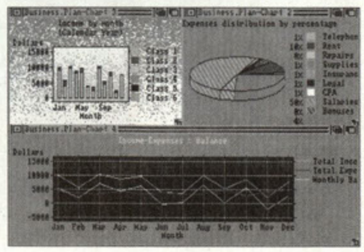


LEFT: This *Plan/IT* Project Management worksheet uses a Gantt chart for presentation.

RIGHT: Plan/IT's Dataview™ mode makes light work of database worksheets.







FAR LEFT: This is the Outline facility – the calculator is a *Plan/IT* accessory.

LEFT: The clever *Plan/IT* zoom facility is also found in *MaxiPlan*.

RIGHT, *Plan/IT*: Eclecticism rules OK! Impressive graphics.

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Yes	No	Yes	£59.95	Kuma	0734 844355	Looks GEM based!
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Yes	Yes	Yes	£99.95	Grafox	01-330-7166	Includes a full suite of project planning tools. Needs 1Mb+
Yes	No	No	N/A	Various	-Dealers-	Supplied with Critic's Choice, Education Pack, etc.
Yes	Yes	No	N/A	Intuitive Technologies	-Dealers-	Subject of legal battle in US
Yes	No	Yes	£129.95	Kuma	0734 844355	Available 2nd quarter 1990.

A note on functions: the number of functions available in any one spreadsheet can only be given as a guide to its versatility; generally more fuctions are better. Most packages group functions into the following catagories: Mathematical; Statistical; Financial; Logical; Trigonometric; Database; Time; Index; and any special ones unique to them. All the high-end software featured here has at least some of all of these functions.

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Access

the final analysis – although all are required for the calculation. Outlining involves setting priority levels for the rows, then setting the global outline level. In outline mode the display only shows rows equal to, or lower than the outline level used. For instance, imagine the following rows have been set to these outline levels:

Row	Outline level
Expenditure	(1)
Staff wages	(2)
Interest/bank charges	(3)
Telephone charges	(2)
Total Expenditure	(1)

Setting outline mode to Level 2 displays:

Expenditure
Staff wages
Telephone charges
Total Expenditure

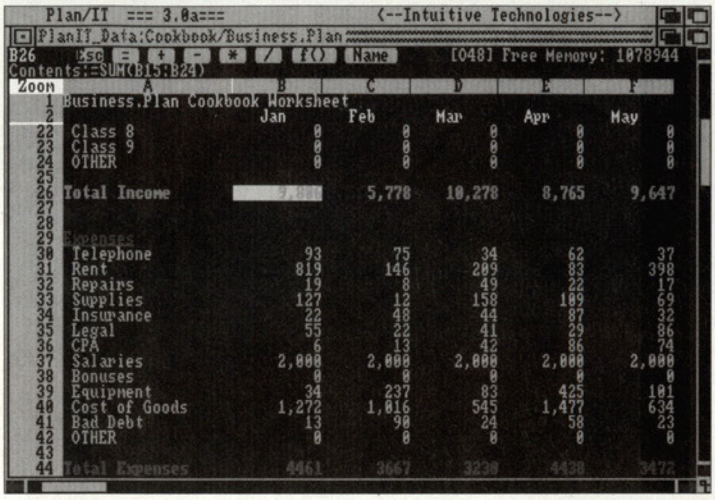
But an outline level of 1 displays:

Expenditure
Total Expenditure

Dataview is the natural progression from the database facilities now found in many spreadsheet packages. When dataview mode is selected, *Plan/IT* prompts for a database to be loaded. When this has been done, the sheet re-configures itself so data can be entered a record at a time – just like a real database package!

Facilities like these make *Plan/IT* just about the most powerful all-round spreadsheet for the Amiga. However, it could be some time before it makes a proper appearance in this country...

A SERIOUS BUSINESS



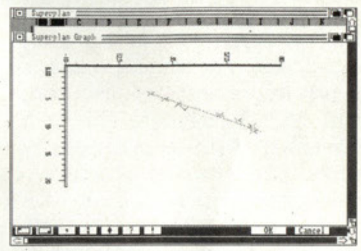
LEFT: The ubiquitous cashflow forecast as seen in *Plan/It*.

RIGHT: Graphs can be rotated and scaled in *Superplan*. This one shows Linear Regression analysis.

SUPERPLAN
Graphox
£99.95

This comes from the database masters, Precision Software's subsidiary Grafox, so one could reasonably expect it to be a impressive productivity tool. It comes on two disks accompanied by a large crib card and voluminous manual rivalled for size only by *K-Spread 3*'s tome. It is also the only spreadsheet featured to employ any form of protection. Like *Superbase Professional,* this comes in the form of a joystick port dongle.

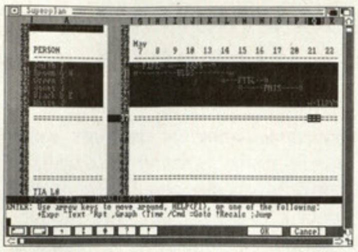
First the good news: *Superplan* is powerful – and unique among current Amiga spreadsheets in that it incorporates Time Management (or Project



Planning) facilities. *Plan/IT 3.0* has similar options but they are not as extensive and the package is not yet generally available. *Superplan* can load alien files from *Lotus, dBase II & III,* and Logistix, CSV, DIF and ASCII text. Finally it can be remotely controlled from ARexx making it compatible with *Superbase Professional.*

GLOSSARY OF TERMS

Auto-Recorded Command Sequence: Set of keystrokes assigned to a single keystroke. Some packages also call this a Macro.
Autoexecute Macro: A special macro used to "run" a macro program as soon as a worksheet is loaded.
ARexx: An interactive script language developed for the Amiga by William Hawes. The significance of ARexx has been realised only recently since Commodore are planning to bundle it with Workbench 1.4 when it arrives. ARexx allows tasks to be controlled remotely from other tasks, adding a new dimension to spreadsheets.
As-Easy-As: Shareware Lotus 1-2-3 clone for the PC: one of the most popular, too.
Axes: Lines drawn on a graph to indicate points of reference.
Cell: A space on the grid where a row and column cross. Cells are the fundamental mechanism behind spreadsheet operations. They are accessed by a grid reference, eg A0, B10, AZ21 etc.
Cell Block: Rectangular area containing two or more cells.
Cell Reference: The column letter and row number of an individual cell used to access its contents in formulae.
Cell Value: The contents of a cell or the result of a calculation in that cell.
Chart: Synonym for graph.
Circular Reference: An error in a sheet when calculations in two or more cells depend on the contents of each other.
Column: A vertical group of cells.
CSV (Comma Separated Value): Simple ASCII-based file format used for data interchange.
DIF (Data Interchange Format): Industry-standard data exchange format supported mainly by Kuma.
Expression: Formula used to calculate a cell value.
Freeze Titles: Maintain a row or column on the screen while scrolling around a database, thus affording access to titles and keeping the data meaningful.
Format: The way in which individual cells, rows, columns or the entire worksheet is displayed.
Formula: A calculation.
Forward Reference: A formula contains a reference to a cell which has not yet been calculated – this can give rise to errors. See also: Circular Reference.
Function: Ready-made formula.
Gantt Chart: A graph used in project planning.
Macro: A stored command sequence executed like a function. Macros form the heart of spreadsheet programming.
Minimal Recalculation: A feature of high-end spreadsheets where just the cells containing formulae or numbers are referenced during a recalculation phase. This speeds up the operation of complex worksheets considerably.
Pie Chart: Simple graph consisting of circle split into segments.
Protected Cell: A cell whose contents cannot be edited.
Recalculate: Compute all the values in the worksheet.
Row: A horizontal group of cells.
Scattergram: Type of graph used mainly in statistics for establishing lines of best fit.
Sideways Printing: The ability of a spreadsheet to print large worksheets in landscape orientation. This avoids having to print several narrow chunks of the worksheet and paste the results together. In practise many worksheets will benefit from this facility.
Slash Commands: Keystrokes borrowed from Lotus to indicate a command or command sequence, eg /V, /TQ
Stacked Bar: Bar chart where associated data are placed on top of one another.
VIP: Lotus 1-2-3 clone on the ST.
WKS, WK1: Lotus 1-2-3 file formats.
WRK: Lotus Symphony file format.
Worksheet: Synonym for spreadsheet. Often refers to the particular spreadsheet currently being worked on as opposed to spreadsheet software in general.



LEFT: Multiple graphs can share the same axes in *Superplan*.

SIZE IS NOT IMPORTANT

Manufacturers frequently make the comparison between the number of rows and columns, ergo the number of cells available in a spreadsheet. Looking at the comparison chart, *DGCalc* has up to 26624 cells available and *Plan/IT* 3 over 16 million. This may sound great but there is a catch: in a spreadsheet, every cell containing something uses a small amount of memory – an overhead – exactly how much depends on the software. This overhead multiplied by the number of cells available determines the amount of memory occupied by the sheet.

Since the Amiga can only handle around 9 million characters of storage, it is impossible to fill every cell on a *Plan/IT* worksheet with single characters. Even if enough memory was available, entering 1 character per cell per second, 24 hours per day – it would take over 6 MONTHS to fill the sheet! Or about 7 hours for *DGCalc* incidentally.

What this illustrates is, the size of the sheet is largely just statistical mis-information meant to confuse people. Most useable applications will fill less than a few hundred rows and probably only 50-60 columns. A typical 2-year cashflow forecast for small business can be held in 48 rows by 26 columns.

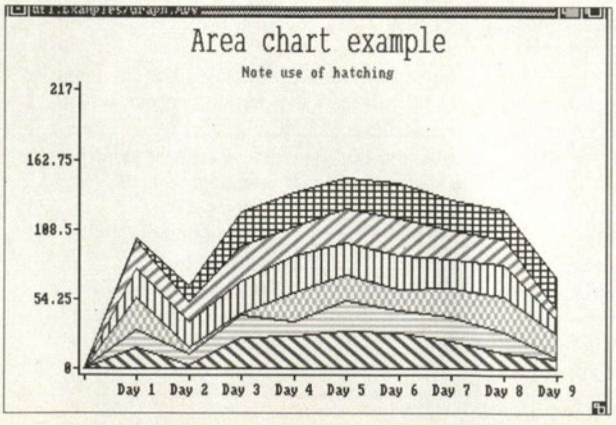
Now the not so good news: *Superplan* is slow – very slow. Screen updates are languid and calculation speed is reminiscent of 8-bit micros. It gives the impression the system was written on a 68020/68881 based system and never tested on a standard Amiga. To be fair, if *Superplan* were running on such a system there would be little to touch it in terms of versatility.

Adding to the poor impression, however, *Superplan* is far too quirky to be friendly. For example, it lacks a proper file request and directories must be set first using the Prefix command. Also construction of graphs is based around a painful system of macro commands. While this is very impressive it is either too time-consuming or overly complicated for many important tasks.

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Gold Disk
£99.95

Gold Disk do not have much of a reputation for producing anything outstanding but this looks set to change that. *Advantage* is different and deserves more discussion than space allows here. First off, it was written using Benchmark Modula II – a departure from the ever-present C. This (and some excellent programming) gives *Advantage* its advantage (ahem!) – a wicked turn of speed. Notable also is the Intuition interface which conforms stringently to Commodore's guidelines – something Commodore rarely seem to bother with themselves. Also worth a mention is its ability to import files from *MaxiPlan* and *Lotus* too, of course. It comes on two disks with a small but clearly-written, well-illustrated manual: the second, the Examples disk, containing a stripped-down version of *Advantage* for those smaller-memoried machines.



BELOW: This *Advantage* large area chart plots in a flash – note the use of fonts.

What makes *Advantage* so special is its superbly thought-out user interface. At no point is the user left feeling frustrated – meaningful error messages make debugging a simple matter. A better illustration still comes from the Chart Options requester. Other packages mention charts by name: pie, XY, line and so on. *Advantage* pops up a little window with an illustration of what each chart looks like so users can pick the one they want. Graphics are drawn at lightning speed too. The Options requester is available in the graph window so changing graphs for comparison is a doddle.

It is difficult to find fault with *Advantage*. Gold Disk have taken the best features from the best packages and incorporated them into one bumper bundle. This is Version One, remember. Throughout the trials it was the most consistent and most stable of all packages tested. Although it lacks many "fancy" features, *Advantage* sets standards of friendliness and speed by which others should be judged.

K-SPREAD 3
Kuma
Price to be under £100 (poss. £99.95)

Trusty *K-Spread 4* rises from the ST to the Amiga at last. The version supplied to *Format* was in the first stages of conversion (about a week old) and tended to be far less stable than its ancestor – 30 seconds between crashes was typical. What can be said is *K-Spread 3*, although based on a GEM-like interface, does look like a force to be reckoned with. Kuma claim that although the package supports *Lotus*, it is modelled more closely around Microsoft's *Excel* – for the Macintosh – which is far more powerful and more up-to-date than Lotus. Release date expected to be around the second quarter of 1990. Remember, you saw it here first.

CONCLUSION

Selecting the right spreadsheet for an individual's needs is not easy – especially when the choice is so wide and the quality, on the whole, good. At the budget end of the market, *Analyse 2* emerges as the clear winner although it is becoming increasingly difficult to obtain. *K-Spread 2* is far and away the lesser of the other two evils.

At the high end, exact choice is even less well-defined. If (and only if) Project Management is a prime concern, then *Superplan* is the only answer. On pure ease of use, Gold Disk's *Advantage* is a superb contender but finds *K-Spread 3* (when it arrives) and *Maxiplan Plus* barking at its heels. Adding to the foray will be *Plan/IT 3.0* when the creaky legal system unravels who should be marketing it. There can be no overall winner since all packages have some redeeming feature to recommend them. But, for the average Amiga owner – owning *Advantage* may t urn out to be just that. ■

DATABASE ADDENDUM

In addition to last month's article, we should point out a developers' version of *Superbase Professional* with licensed run-time module is now available for the Amiga. Further details can be gleaned from Precision Software.

work BENCH

If you're looking for answers, you've come to the right place. If you're looking for tips, look right in my face – says **JASON HOLBORN**.

COMMS QUERIES

I have access to a Miracle Technologies WS3000 modem. Can you tell me whether it would be possible to connect this modem to my Amiga and, if so, what lead will I require?

Secondly, I will need some software to drive the modem. Which do you recommend? Are there any decent communications packages available within the PD libraries? Lastly, can you suggest a good source for BBS numbers?

A Perkins
Swindon, Wilts



Get online without trouble, with 'Comms Queries'.

You're in luck – the WS3000 will work fine with your Amiga. What you will need is a RS232 cable (which should be available from your local computer store).

In terms of software, there are basically two types of communications software – viewdata and terminal. Viewdata is a special teletext-type system that allows the display of both graphics and text, where as terminal software is almost completely text-based. In most cases, terminal software will do fine and there are several commercial quality programs of the type available within the PD libraries. One of the best is Access! which was actually featured on the Coverdisk of Issue Three of Amiga Format.

If you intend to use systems such as MicroNet, Gnome at Home etc, then you will need to purchase a Viewdata package. As far as I am aware, no such packages are available within the PD libraries (correct me if I'm wrong!), but Y2 computing sell a package called RubyTerm, which will do the job nicely. Y2 can be contacted on 0923 50161.

Good sources for BBS numbers are the bulletin boards themselves. To get you started try the following numbers – 01 377 1358 (01 For Amiga), 0903 700771 (IDPEX). Both of these boards have special Amiga Format sections which will allow you to send E-mail directly to us. Both are terminal boards which support 300/1200/2400 baud rates.

PUBLIC KNOWLEDGE

I am currently studying for my Business Studies GCSE and the course entails setting up a small business. Our group has decided to set up a small public domain distribution company. I wish to know our legal position with regards to the business and any regulations pertaining to making a profit. Please help.

N Harvey
Esher, Surrey

The issue of Public Domain software distribution is more of a moral issue than a legal matter. There really is nothing stopping anyone from purchasing PD disks from an existing library and then selling them on themselves.

If you decide to compile your own PD disks, you must always protect yourself by insisting that the authors of any software that you use include some form of disclaimer that states that the program is their own work and they have given permission for it to be distributed. However, If you only intend to distribute existing libraries, you are morally bound not alter them in any way.

Where profit is concerned, this is once again up to you – it really is a question of conscience. Most PD suppliers charge (at most) about £3 for a PD disk, which includes the cost of disk duplication, media and postage. Anything greater than this and you really are just ripping off your customers (who will realise that you are ripping them off and so will then go elsewhere).

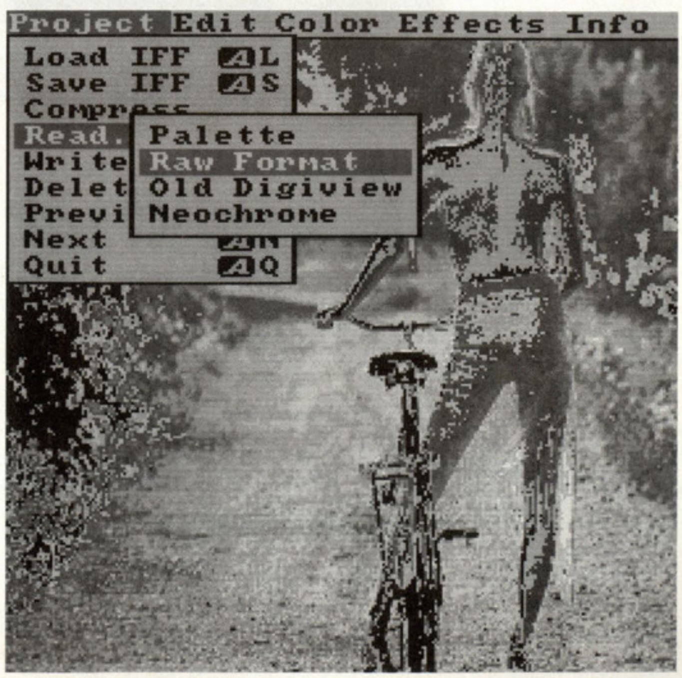
GRAPHICS ASSEMBLY

I want to use graphics from *DPaint II* within my assembler programs. Is there a program available which will convert IFF files to the required format? Thanks.

B James
Folkestone, Kent

What you require is a utility to convert IFF pictures to RAW format. RAW is a very simple picture file format which is particularly well suited to programming. Simply by using the Devpac directive INCBIN, raw graphics data can be included within the code of a program (without having to load them first!) Several such PD utilities are available, but my advice to you would be to purchase a package called PIXmate which includes a whole host of extra options to make the task of including graphics within your programs considerably easier. Contact Precision on 01 330 7166 for more information.

BELOW: *PIXmate* in action.



CUTTING CORNERS CORNER

Although the Amiga Workbench is mouse-based, it is possible to carry out mouse operations through keyboard shortcuts:

Right Amiga + X – Clears the currently active string gadget.
Right Amiga + Right Alt – Same as pressing right mouse button.
Right Amiga + Right Alt + Cursor Key – Moves mouse pointer.
Left Amiga + Left Alt – Same as pressing the left mouse button.
Left Amiga + Left Alt + Cursor Key – drags selected icon or window around the screen.
Left Amiga + V – Selects the RETRY gadget on a system requester (even if mouse pointer is not over it).
Left Amiga + B – Same as above, but selects CANCEL gadget.

I Pearce
Thame, Oxfordshire

ICON HELP YOU

Please help! How do you create large icons like those used on your Coverdisks? I've tried the Workbench Icon Editor but the size of the icons that it will produce is rather limited. Do I need a special program to do this?

Secondly, I've been trying for months to work out how to save the size of a window, the position of icons etc. How do you do it?

R Ambasna
Mitcham, Surrey

You're right, the Workbench Icon Editor will not do the job. We actually use a Program called IconMaker *which was published on Issue Five of our parent magazine,* ST/Amiga Format. *The program takes a IFF brush file created in a paint program such as* DPaint *and turns it into a Workbench icon. The good news is that we have definite plans to re-run this program on Amiga Format, so keep an eye open for that one.*

The answer to the second question is simple. What you must do is to use the 'Snapshot' option which can be found within the Workbench 'Special' pull-down menu. A full tutorial on how to use Snapshot will appear next month.

PAGE PLAY

Following some of my clients' requests to provide a faster turnaround of their internal notices and information sheets, I have decided to purchase a computer capable of running a good DTP program (eg *PageMaker*).

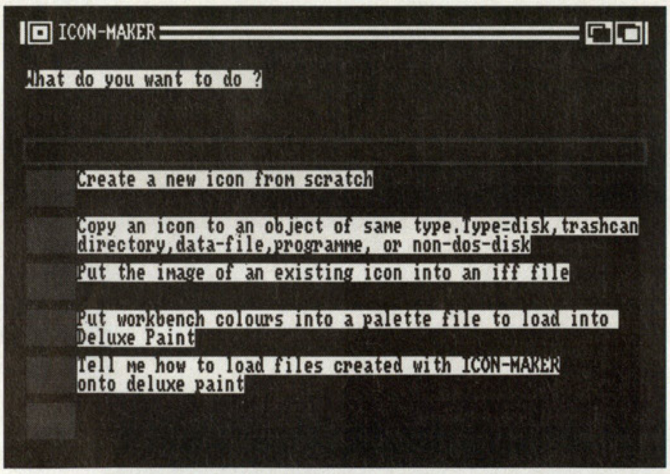
I have considered IBM MSDOS machines, but prefer the graphics capabilities of the Amiga 2000. I have seen a friend's A2000 and am left wondering if we will be able to output text of sufficient quality for our requirements, as the Amiga apparently lacks 'SuperFonts'. I also need confirmation that I can run *PageMaker*, and that I can use the many typeface packages available to back it up. I would value your comments.

R Saunders
Broadstairs, Kent

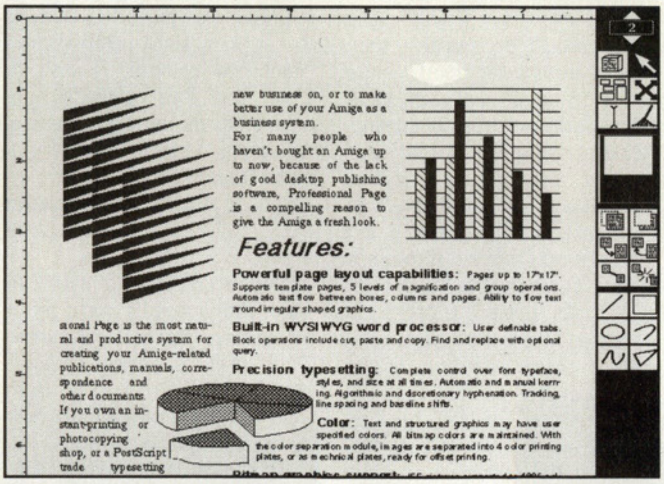
The first thing that you must realise is that the Amiga is not compatible with an IBM PC. Both machines run entirely different operating systems which are not at all compatible. Although the Amiga can be made to run PC software with the addition of a PC bridgeboard, MSDOS is not the native operating system of the machine. If you insist on running PageMaker, *then you really are better off buying a PC clone.*

Although it is not possible to run Aldus' DTP system, the Amiga has its own range of quality desktop publishing software. Top of the pile is undoubtedly Gold Disk's Professional Page, which can hold its head up high with just about any package that other machines have to offer. As well as Postscript, ProPage 1.3 (the latest release) supports new AGFA/Compugraphic fonts which provide the highest possible output resolution from just about any printer that is capable of printing graphics. The quality of these fonts is restricted only by the quality of your printer. For more info on Professional Page, you should contact HB Marketing who can be reached on 0753 686000.

BELOW: ***Icon Maker*** **in action.**



BELOW: ***ProPage*** **could be the professional answer to DTP problems.**



SCREEN PLAY

I've got a problem. How do I display a 32-colour picture in 68000 assembler without having garbage all over it? By garbage I mean sometimes the outline is there (usually in blue) and there's all these fine lines of different colours all over it. Other times there is just garbage all over the screen.

Many people, magazines and books have tried to explain but they might just as well speak Hindu. I've bought the Hardware Reference Manual which provided some help. I'm sure the solution lies in memory allocation, but the Hardware Manual isn't too helpful in this area. Please help.

J Baliman
Dyfed, Wales

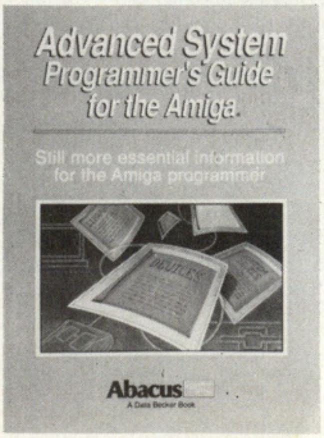
There are a number of possible reasons why your picture is not being displayed correctly. Firstly, are you using the INCBIN directive to pull in an IFF picture? If so, a better solution is to convert the IFF picture to RAW format before assembly. This way, the bitplane data will be in the correct format for direct use. If you use interleaved bitmap data (which is the data stored within an ILBM file), you will have to write a section of code to strip out the IFF headers and translate the data into a more useable format before the machine can touch it.

Once this is done, the next thing to check is the DDF and DIW start and stop values that you are using. If these do not correspond directly to the format of the picture, bitplane data will not be displayed correctly. For a standard PAL low-resolution screen, the DIWSTRT value should be $2C81 and the DIWSTOP value should be $2CC1. Corresponding DDFSTRT and DDFSTOP values are $0038 and $00D0 respectively.

If the garbage you refer to is continually changing, the reason for this is simple – stray bitplane pointers. Check the copperlist that updates each bitplane pointer to make sure that the address of each bitplane is being written to the plane pointers correctly.

If this hasn't helped you, check out Abacus' Amiga System Programmers Guide which should provide more help.

BELOW: Abacus' book will help.



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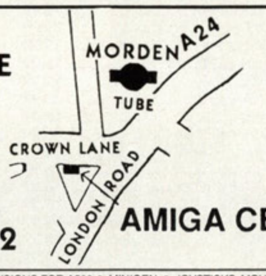
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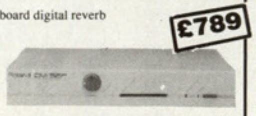
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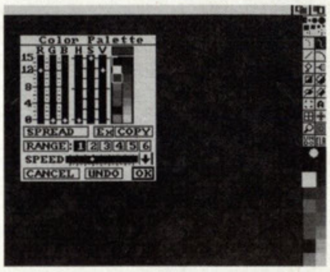
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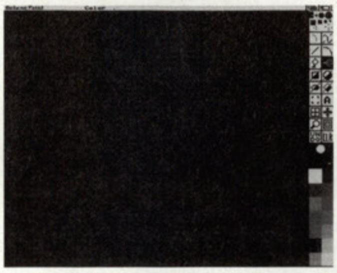
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MARBLE MADNESS

Are you fed up with having to rely on stark backdrops for your Amiga titles? Do you want to emulate textures created using digitisers without shelling out for such expensive gear? Well here is a simple method for producing your own 'marbling' effects in *Deluxe Paint*.

1. First set up a range of subtle colours. The actual hue is up to you, but try to keep an even spread of at least five colours. Once they have been created, set the spread up as a range and use the darkest colour as a backdrop.





2. Select AIRBRUSH from the tools and use the thickest round brush. Spray haphazardly across the backdrop using the next lightest colour to achieve a 'mottled' effect.

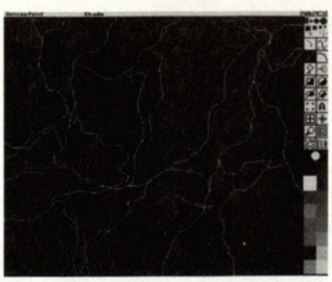
3. Continue building it up stepping through the colours until you reach the last in the range. Try to spray randomly so that different areas have different amounts of light and dark tones.





4. Pick up a small section of the screen as a brush and select BLEND from the mode menu. Smear across the screen so that the colours merge into one another, producing subtly shaded areas.

5. Switch to the spare screen and, using the thinnest brush, draw random lines all over the screen to look like cracks or veins. Pick the lines up as a brush and select SHADE from the mode menu.





6. Return to the previous screen and stamp down the brush over the blended area you created, until the veins are JUST distinguishable. Now just tidy the edges for a finished marble slab!

Maff Evans
Amiga Format

WHAT A CON

I am sure that many people will have the same problem as I have. My problem concerns creating a RAM disk on an ordinary bootable disk and also getting a Shell to work on an ordinary bootable disk. After copying Shell, the Amiga asks me for a disk called NEWCON. I went in search for this in the StartUp-Sequence and there it was – MOUNT NEWCON:. I copied the CLI command MOUNT to my C directory and tried it out but to no avail. I even copied a chunk of the Workbench StartUp-Sequence, but this didn't work either. Please help.

I have recently bought a 1084D colour monitor and want to connect it to my Dad's video recorder, but I cannot find a shop that sells the Euro-connector cables. I have heard that they are expensive and so I have been considering making my own. I can get my hands on all the neccessary parts, but I haven't a clue about the wiring.

J Gordon
Wallington, Surrey

Getting a RAM disk and Shell onto a bootable disk isn't just a matter of copying the Mount command and Shell across onto the disk.

What you need to do is to create two directories called L and DEVS. Copy the files Newcon-handler, Shell-seg, Ram-handler to the L directory and copy the file MountList to the DEVS directory of your bootable disk (all files can be found within the L and DEVS directories on your Workbench disk). If all goes well, both your RAM disk and Shell should now work fine.

Forget about Euro-connectors, there's a considerably easier and cheaper solution to the problem. At the back of the 1084D you will find a row of three phono connectors, one of which will be labelled 'VIDEO'. All you have to do is to connect a lead from the VIDEO OUT connector on the back of your video to this connector (you'll probably need just a phono to phono lead).

Finally, to make the video picture appear, open up the front panel of the monitor and flick the Video Mode switch to 'COMP'.

BOB'S YOUR UNCLE

If you're a BASIC programmer and you're interested in getting the most out of the Amiga's graphics system, you've probably experimented with Sprites and BOBS (Blitter Objects). AmigaBASIC comes with a utility called the 'Object Editor' to help you design these handy little devils.

The standard version of the object editor only allows you four colours on screen at once. However, if you have enough RAM within your machine (a megabyte at least), it is possible to increase the number of available colours, thereby allowing you to create BOBs containing up to 16 colours! These extra colours are limited to BOBs only, not sprites, as these are limited to four colours anyway.

What you have to do is edit the Object Editor program, which is (not surprisingly) written in AmigaBASIC, to remove the comment markers from a few vital lines so that the AmigaBASIC interpreter actually runs them.

A standard 512K A500 will happily run an 8-colour version of the Object Editor, but if you want to use 16 colours, you're going to need at least a megabyte.

To increase the colours from 8 to 16, just edit the line Depth=3 to read Depth=4. This increases the number of bitplanes to four, therefore giving you sixteen colours.

Albert James, Northwhich

HEEEEELLLPP!

The Amiga is undoubtedly a powerful machine, but why does it have to be so damned complicated? If you do have a problem with your Amiga, you have two options – the first is to keep it to yourself for a number of years until the strain finally causes you to suffer a nervous breakdown. Alternatively, why not write into the Workbench Helpline?

Obviously we can't enter into personal correspondance (we just don't have the time, so save your stamps!), but we try our utmost to squeeze as many as we can into these pages. Send your letters to – WORKBENCH HELPLINE, 30 MONMOUTH STREET, BATH BA1 2AP.

TIPS FOR THE TOPS

The sun has got his hat on, hip hip hip hip hurray! Yes folks, Summer is here, the sun is shining, but that's no reason to stop sending your tips into Workbench. I know that you would much rather be out lazing around on a beach, topping up the tan, but that's no excuse to neglect your Amiga! Get those tips rolling in NOW!

We want tips on absolutely anything. If you're a whizz with a particular software package – we're particularly interested in tips for *Music-X, Professional Page, DPaint, Aegis Sonix* – then write down any useful hints and tips that will help your fellow Amiga owners get the very best from their Amigas. Every month we pick one tip that we believe is the best of the month, and that lucky reader wins fifty quid for his troubles.

FLICKER KILLER

Unless you're lucky enough to own either the complete Enhanced Chip Set or a Flicker Fixer board, the Amiga interlace mode can be a real pain in the posterior. Although most programs allow you to turn off interlacing (*ProPage* is a good example), some programs still insist on doing the interlace hop.

However, due to an 'undocumented feature' (which roughly translated means 'bug') of the Amiga Operating System, it is possible to de-interlace any screen – and that even includes high resolution screens!

This wondrous trick is achieved by carrying out the following procedure. First, load a program that runs in an interlaced screen (*ProPage* or *DPaint* are good examples). Now click the screen gadgets so that the Workbench screen appears. Move the pointer up to the very top of the screen and drag the Workbench screen to the very bottom of the display. Now do the same for the interlaced screen – the interlaced screen should now actually disappear behind the Workbench screen.

Next, click the Workbench screen to the back and drag the interlaced screen all the way to the top of the display. Finally, click the interlaced screen to the back and your previously interlaced screen should now be de-interlaced. Weird or what?

M Gailes

PUTTING THE BOOT IN (AGAIN)

Constructing a bootable disk that loads Workbench can be a real pain if you only have a single drive, but for those of you with extra drives the process is made considerably easier. To make the task simpler yet, the AmigaDOS batch file below creates a disk that will boot to Workbench. Just type it in using a text editor such as Ed, then insert the disk to be constructed into drive DF1: and your Workbench disk into the internal drive and run the batch using the AmigaDOS Execute command.

I Morse
Feltham, Middx

```
Echo "*ec"
Echo "Bootdisk Creator V1.3*n"

; Format Disk

SYS:SYSTEM/Format DRIVE DF1: NAME "WB" NOICONS

; Check for C,L,S,LIBS and DEVS directories

IF NOT EXISTS DF1:C
     Echo "*nCreating C directory"
     MakeDIR DF1:C
EndIF
IF NOT EXISTS DF1:S
     Echo "Creating S directory"
     MakeDIR DF1:S
EndIF
IF NOT EXISTS DF1:LIBS
     Echo "Creating LIBS directory"
     MakeDIR DF1:LIBS
EndIF
IF NOT EXISTS DF1:DEVS
     Echo "Creating DEVS directory"
     MakeDIR DF1:DEVS
EndIF
IF NOT EXISTS DF1:L
     Echo "Creating L directory"
     MakeDIR DF1:L
EndIF

; Copy files across

Echo "*nCopying command files to C"
Copy C:CD|ECHO|LOADWB|ENDCLI DF1:C QUIET
Copy C:COPY|MAKEDIR|DELETE DF1:C QUIET

Echo "Copying Icon-Library to LIBS directory"
Copy LIBS:ICON.LIBRARY DF1:LIBS QUIET

Echo "Copying System-configuration to DEVS"
Echo "directory"
Copy DEVS:SYSTEM-CONFIGURATION DF1:DEVS QUIET

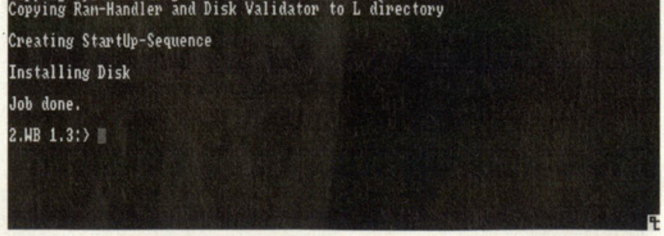
Echo "Copying Ram-Handler and Disk Validator"
Echo "to L directory"
Copy L:RAM-HANDLER|DISK-VALIDATOR DF1:L QUIET

Echo "*nCreating StartUp-Sequence"
Echo > DF1:S/StartUp-Sequence "LoadWB*nEndCLI"

Echo "*nInstalling Disk"
Install DF1:

Echo "*nJob done.*n"
```

BELOW: Creating a Stand-alone Workbench disk is no trouble at all with the boot disk creator.




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Telephone 0279 757692.

RAW fax

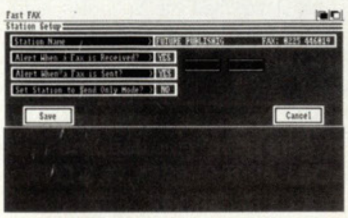
Want to send and receive faxes from your Amiga? **RICHARD MONTEIRO** shows how you can.



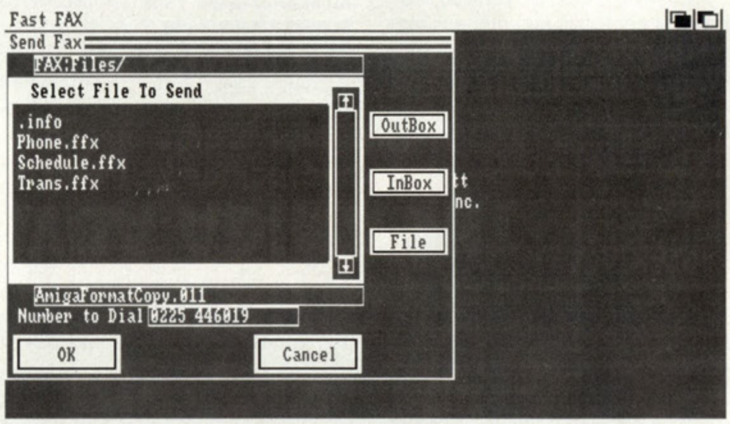


As with most things, the more you spend, the more sophisticated the product. For around £500 you can get a no-frills fax machine that can take one page of information at a time and send it to a single location. A more expensive machine for around £1,200 will handle multiple sheets, be able to process 16 grey-scale levels or more, and let you send a fax at a preprogrammed time. An even more expensive machine costing upwards of £2,000 will let you send multiple faxes to various destinations.

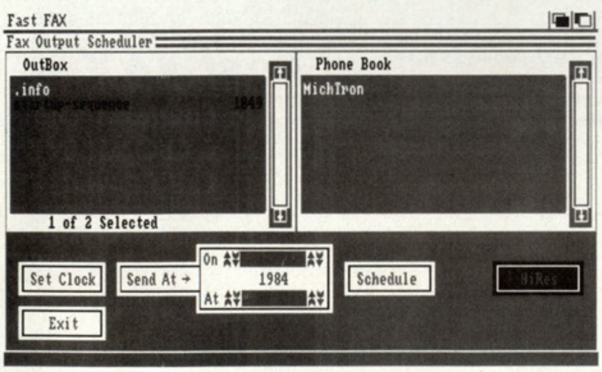
The disadvantage of dedicated feature-packed fax machines is that they are incredibly inconvenient to program. Too many push buttons mean too many opportunities for something to go wrong. In an office environment something speedy and efficient is required. While a top-of-the-range fax might be able to squirt information down the line at incredible rates, it's getting the equipment to do what you want in a hurry that often turns out to be the problem.



LEFT: Fast FAX works with all Amigas, STs and PCs. The hardware's the same; it's just the software that's different.



RIGHT: Sending a fax can be as simple as selecting a document to send and entering the phone number.



BELOW: The scheduler lets you determine when and where a fax is to be sent.

The Alternative

Microdeal's Fast FAX is more effective and efficient at scheduling and transmitting faxes than any self-contained fax machine at any price. Very briefly:

- Embedded commands in text files enable letterheads, signatures and graphics to be inserted in your fax documents.
- A view option lets you display a fax on the computer screen or send the fax to printer.
- Over 1000 contact names, company names and associated fax phone numbers can be stored using phone-book-like software.
- Scheduling lets you send multiple faxes to multiple locations at any time. You can set up the software to send your faxes any time of the day, any day of the month or even any month of the year.
- Received faxes can be saved as IFF files for importing into DTP programs or graphics packages.

The Fast FAX hardware consists of a box the size of a hardback book, a meaty power supply and a cable that fits between the fax hardware and your computer's serial port. Apart from a couple of BT-style phone sockets at the back of Fast FAX and eight LEDs at the front, there's nothing to get excited about.

Inside, however, things are very different. There's a 68000 processor ticking at 8MHz, 32K of non-volatile RAM and 64K of ROM. Data rates supported include V29 (9600bps, 7200bps), V27 (4800bps, 2400bps), and V21 (300bps). The combination of hardware and software gives you a CCITT Group III compatible fax. Both tone and pulse dialling are offered. For those that have laden phone lines, Fast FAX has a REN (ringer equivalence number) of 0.7.

Soft Options

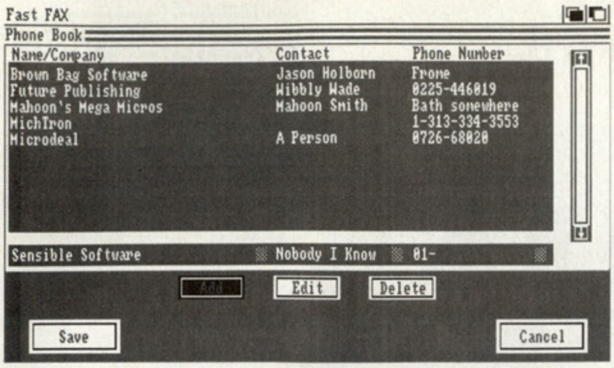
Fast FAX's software lets you send straight ASCII files, Epson (printer) files, faxes it has received and stored, and also ASCII files containing dot (embedded) commands.

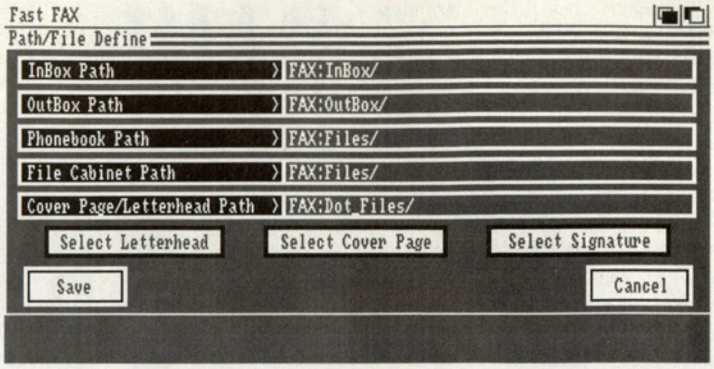
ASCII files containing dot commands offer you unbelievable power over what gets sent down the phone line. For instance, letterheads, signatures and graphics can be mixed with text. Dot commands, if used, are placed in a file on their own. For instance, the following is plausible:

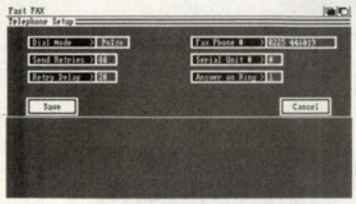
```
.C
.L
.FLETTER.TXT
.S
```

The above would send a coverpage (.C), then letterhead (.L), followed by a file (.F) named LETTER.TXT, and finally place your signature (.S) at the end of the last page sent.

You can configure Fast FAX to place your name or the name of the business in the upper left corner of every fax you send. Similarly, your fax phone number can be displayed at the top of every page. From the configuration menu you can also select the dialling tone or pulse







TOP LEFT: Fast FAX's phone book can store 1000 names and fax phone numbers. Sadly there's no sort feature for sending faxes to specific places.

TOP RIGHT: Paths can be set for incoming faxes, received faxes, the phone book and letterheads.

ABOVE LEFT: Fast FAX may be configured to answer the phone after a predetermined number of rings. This is useful if you only have one line and want to intercept incoming calls.

required by your local system. If you don't know what sort of service is being offered in your area, simply try one and then the other until you eventually manage to transmit a document successfully.

It's also in the configuration menu that you get to set the retry and retry delay values. The retry value simply indicates how many times Fast FAX should try to send a document before giving up. The retry delay is a value between 1 and 99 which represents the retry delay in minutes.

Choices

Faxes can be sent in two ways: either manually or at a pre-determined time. In manual mode you simply supply a file name and fax phone number. The software takes care of the rest. By using the scheduling menu you can set up times and dates to send one or several faxes.

To use the scheduler, it is necessary to have a previously-defined phone book (more on that in a moment) and the document files in the correct format for sending. By making shrewd use of Fast FAX's scheduling facilities you can get the software to send faxes at times when there are cheap phone rates.

Multiple files may be selected for transmission to a single location or a single file may be sent to multiple locations. Up to 10 documents may be selected for transmission to a single destination. More can be sent by transmitting the first group of 10 and then scheduling the next group to be transmitted at a later time.

Address the Book

The phone book is used for storing commonly-used fax telephone numbers. Just over 1000 names and phone numbers can be stored. Embedded commands can be placed alongside phone numbers. These allow you to determine the dial style, to transfer calls, and to enter pauses.

Sadly the phone book isn't very sophisticated; you can add and delete numbers, but little else. Several phone books – or at least the ability to sort fax phone numbers by some useful criteria – would have been excellent. There will rarely be an instance in which you wish to send the same fax to everyone in your phone book. However, there will be plenty of times when you wish to send faxes to a select group of people or companies. Unfortunately you'll have to select exactly *which* companies receive your fax manually.

In Your Sleep

To receive faxes it's necessary to put the software in sleep mode. It's at this point you can switch off your monitor (but nothing else) and leave Fast FAX to receive transmissions and, if pre-programmed, send faxes according to the schedule. Alternatively you can put the software in sleep mode, flick back to another Workbench task and continue with something else. Ahh, the joys of multi-tasking.

Received fax files can't be stored in ASCII format – it would take enormous processing power and very clever software to attempt such a feat. Instead, the fax can be saved in IFF format for editing in a DTP program or graphics package.



RIGHT: Received faxes can be viewed on screen in high-res interlace mode.

During use, Fast FAX's vast array of LEDs will spring to life. There really isn't any need for the disco lights as they're simply operational and error indicators. In any case, the software reports back success or failure.

As it stands, Fast FAX is enormously superior to dedicated fax machines costing thousands of pounds. There are a few features that are glaringly missing. It would be handy if you had the option to automatically print a fax on receipt – the problem with that, of course, is that you have to have your printer switched on in addition to your computer. Another problem, if you're using a single line and you've intercepted a call only to discover it's a fax transmission, is that there's no way of allowing Fast FAX to take up the call. A few more frills in the phone book department would be nice too.

At a few pounds under £700, Fast FAX isn't cheap. But compared to dedicated fax machines it's an absolute bargain. The software is a doddle to use, scheduling is fantastically useful and overall operation is extremely smooth.

With all the silicon that's present inside Fast FAX it seems strange that Microdeal haven't released the thing as a combination modem and fax. Something, for Fast FAX Plus?

FAST FAX
All Amigas ■ £688.85 ■
Microdeal (0726) 68020

HARD ACT TO COPY

If you wish to print a received fax, it's necessary to install the Epson[CBM_MPS-1250] (nice, easy-to-remember name, Commodore) printer driver on your boot disk. The driver lives on your Extras disk and is easily installed using the InstallPrinter program in the Utilities folder.

Fast FAX lets you send Epson printer files to other fax machines. Fine, but the problem is getting them in that format in the first place. There isn't a problem if your word processor or other application lets you print to disk... ho, ho – thanks for nothing! Thankfully there is a solution if the application you use doesn't print to disk: Cmd. This program – another that lurks in the Utilities drawer on your Extras disk – redirects output to RAM disk rather than your printer. The resulting file will be called CMD_file. Naturally you can only write one file at a time.

Unless you have an Epson-compatible machine, and wish to produce a hard copy of any received faxes, you'll need to install a second printer driver. Ho hum, back to the Extras disk.

G

2



Black Tiger
from U S Gold

US Gold have had major hits with Strider and Ghouls 'n' Ghosts. Now comes their latest horizontally-scrolling action game, Black Tiger.

In a similar fashion to Ghouls, the objective is to charge through horizontally-scrolling levels, climbing ladders and following red arrows to the end of the level. Along the way, fight ugly gargoyles, snakes and even deadly orchids using your powerful weaponry. When the going gets tough, disappear inside the shop, pick up some extra weapons, and go out for another merry blast.

If you're a fan of horizontally-scrolling action games, you'll love this one.

Black Tiger

		PRICE	CODE
Amstrad CPC	Cass	£ 9.99	BF840AC
Amstrad CPC	Disk	£14.99	BF841AD
Commodore 64	Cass	£ 9.99	BF842CC
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ET ONE FREE!

4



Cabal from Ocean

Go crazy in cartoonland with Cabal. A lone trooper, he's dropped behind enemy lines and must fight his way back home. Level after level must be cleared of buildings and bad guys with machine guns, grenades and bazookas. It looks like Operation Wolf for the under fives but plays like a vet.

Cabal

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Amstrad CPC	Disk	£14.99	BF856AD
Commodore 64	Cass	£9.99	BF857CC
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Title	Machine	Order Code	Price
			FREE!
			FREE!

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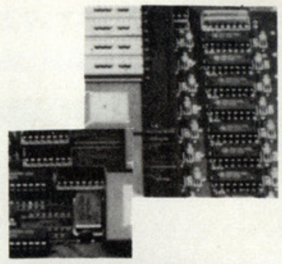
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Turbo TECHNIQUES



There's speed to be gained by turbocharging your Amiga, suggests JASON HOLBORN.

Computing power certainly has advanced in leaps and bounds since Clive Sinclair unleashed his ZX80 onto an unsuspecting public in the late 1970s. In those early days, a 2 MHz processor was the height of technology. Even though very few people had even the slightest concept of what such figures actually meant, single-figure processor speeds were considered to be real power computing.

These days, of course, single-figure processor speeds are considered pretty tame stuff when compared to the 'super' personal computers currently doing the rounds. Even though you may think your Amiga is a pretty nippy little fellow, even the powerful 68000 can take an age to carry out even the simplest of number-crunching tasks.

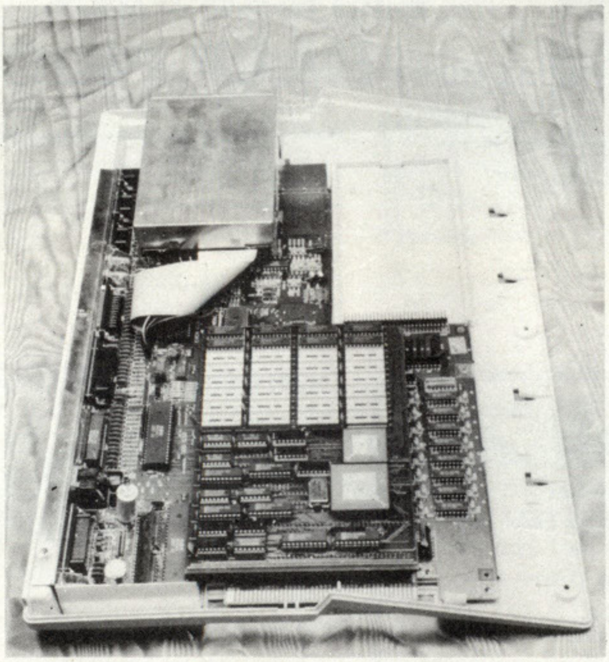
To keep the Amiga up with the big boys in terms of computing power, both Commodore and third party hardware vendors have produced accelerator cards that can speed your Amiga up several times. Even the new Amiga models, the A2500/30 and the A3000 (*and* the A3500?) boast considerably faster processors that could leave a standard Amiga for dead in terms of raw computing power. Unfortunately, such wondrous devices were previously out of reach of most of us due to their rather high prices. All that could change with the release of Solid State Leisure's 68020-based 20-CARD.

Spec-Savers

The Solid State 20-CARD is a processor accelerator card that fits internally into an Amiga 500. The board is based around the big brother to the 68000, a 16-MHz MC68020. Fitting the board is simplicity itself and could easily be carried out by any reasonably competent person (although it is always wise to cover yourself by employing a qualified engineer). Full instructions are included. All you have to do is open your machine, locate and remove the 68000 processor and plug the 68020 board into the 68000's now-empty chip socket. That's all there is to it – no cutting of wires, no soldering, no hassle.

Depending on your budget the board is available in a number of configurations, ranging from just a 68020 with a megabyte of 32-bit RAM to a 68020 complete with a 16 MHz 68881 (or 68882) maths co-processor and 4 Mbs of 32-bit RAM. Even if you just buy the base-level card, you can easily add a maths co-processor and extra RAM later.

The advantages of a maths co-processor are obvious. Any program that either directly addresses the 68881 or uses the new 1.3 maths libraries will be enhanced considerably by the presence of this clever chip. Several top number-crunching applications such as the *Sculpt* range and *Turbo Silver* have been revised to take advantage of the 68881.



ABOVE: Installing the 20-Card is simply a matter of removing the standard 68000 and plugging the board into the empty chip socket.

Unlike the 68000, the 68020 is a true 32-bit processor. This basically means that because the standard Amiga RAM is only 16-bit, your new processor can never run at its full speed. Running a 32-bit processor alongside 16-bit RAM is like sticking a Reliant Robin engine into a Ferrari. The 20-CARD has the added advantage of offering ROM Shadowing.

This allows the Amiga Kickstart ROM to be copied into the 32-bit RAM. Once copied, the board then re-vectors any ROM acccesses to this area of memory, thus speeding up the entire system. Because this re-vectoring process is completely transparent to the system, all programs that legally use the Amiga operating system routines will be speeded up. Clever stuff, huh?

The Need For Speed

Wow, does this thing fly! Unlike previous attempts at producing a 'budget' accelerator card, the increase in speed really is noticeable. Even without the addition of a maths co-processor, operation of the Amiga is enhanced considerably. If you add 32-bit RAM and a maths co-processor, things really start to cook.

According to the public domain system diagnostics program *SysInfo2,* the 20-CARD runs at 5.5 times faster than a standard Amiga and 18 times faster than an IBM XT, which I'm sure you'll agree is pretty impressive. The 20-CARD really comes into its own when used with packages that take advantage of the 68881. Ray-tracing fans won't believe the difference that the board makes!

Conclusion

Not all software (particularly games) appreciates the presence of a 68020 (not just the 20-CARD, but 68020 processor cards in general). It would have therefore have been nice to have some kind of 68000 fall back mode (like the Commodore 2620 card for the 2000) that would allow you to switch back to a 68000 to run your favourite games. As it is, you'll have to either keep swapping over the chips or kiss goodbye to the game forever.

Gripes aside, the Solid State 20-CARD is a phenomenal piece of kit. Not only does the Amiga run much faster but everything seems so much smoother. If you use any software package that involves large amounts of number crunching, then the 20-CARD is a definite must. All in all, highly recommended.

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Showing OUT

Zuma's *TV*Show 2* is the latest release of their highly-regarded desktop presentation system. **JASON HOLBORN** takes a look.

Not another desktop presentation package! What could another package possibly offer that hasn't already been done a thousand times before? We've seen simple slideshow programs that do nothing more than display pictures one after another, right up to full-blown presentation systems incorporating full timecode support, video effects and all the rest. With the desktop presentation market virtually swamped with packages all crying out for your attention, choosing the package that is right for you is about as simple as balancing an egg on your nose.

Following on from the recent release of *TV*Text Professional* (as reviewed in last month's *AF*), Zuma have released the follow-up to their highly-regarded desktop presentation package, *TV*Show*. What makes *TV*Show 2* so special isn't its features (although it certainly isn't let down in this department), but its sheer ease of use. After little more than minutes, you'll be producing professional-standard presentations that would put the BBC to shame!

Presenting TV*Show

The system works in a very similar manner to a conventional slideshow program. However, *TV*Show 2* doesn't just restrict itself to displaying pictures – your presentation's source material can consist of IFF pictures, digitised sounds, synthesised speech, IFF brushes and even animations in standard IFF ANIM format.



RIGHT: The output from *TV*Show*. Each line is an individual event.

The package consists of two disks and two manuals. The first of the disks contains the presentation building program, a script mover utility (more on this later) and the freely distributable run-time system that will allow you to make your presentations widely available.

Construct a Presentation

*TV*Show 2* presentations are based around a system of individual events. An event can consist of any one type of audio or visual file ranging from a simple IFF picture to a full-blown ANIM animation. Once you've chosen one of the various event types, you can then attach attributes to that event that dictate how it is first displayed, how long it stays on the screen and then how it is eventually removed from the screen.

To add that truly professional look to all your presentations, *TV*Show 2* includes a whole host of professional video effects including fades, rolls, reveal, wipes, pushes and patterned wipes. These effects can be used for both the initial display and eventual removal of an image.

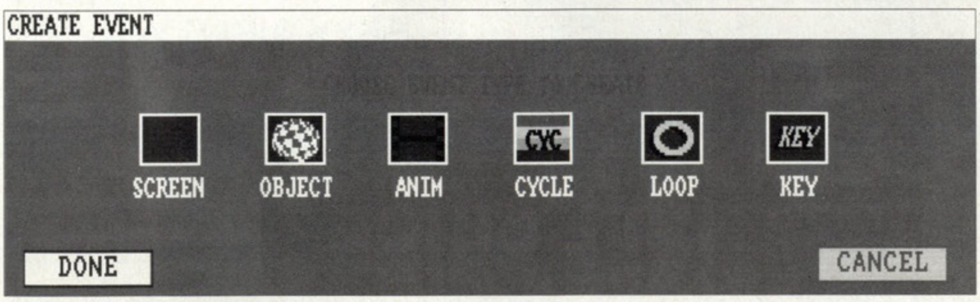
As well as animations and static images, *TV*Show* allows you to breathe life into your presentations by bringing in IFF brush files. Even sound effects and a 'voice over' can be added, using sampled sounds and synthesised speech respectively.

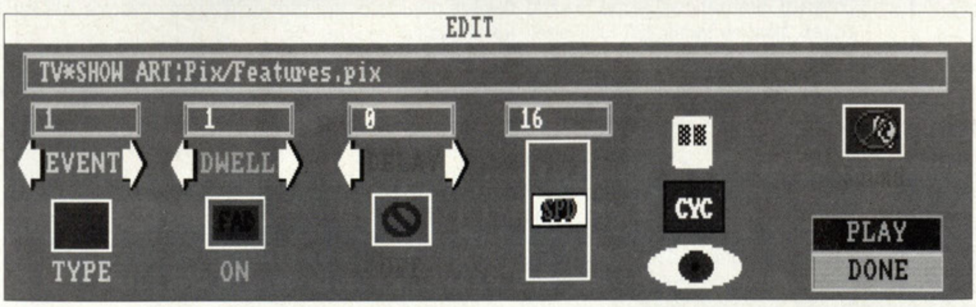
Although virtually no typing is required throughout the process of constructing a presentation, *TV*Show 2* is essentially a script-based program. However, the scripts that it utilises are not written by the user, but are produced by the main program as an external text file. In theory you could write these script files yourself using a conventional text editor, but the included presentation builder utility makes the process a complete doddle.

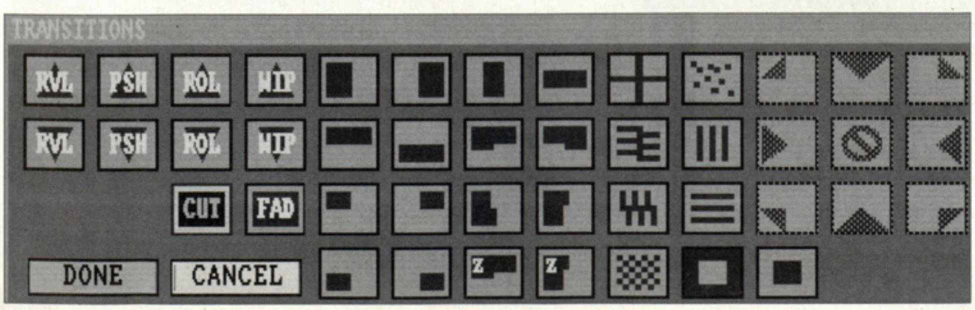
Conclusion

It's hard to believe that a program that is so easy to use can produce such high-quality results. *TV*Show 2* is one of those programs that is so well designed that just a quick flick through the manual is all you need, to get up and running. Used in conjunction with Zuma's video titling package, *TV*Text Professional*, you'll have one of the most powerful presentation systems available.

TV*Show 2
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TOP: Choosing the event type.
MIDDLE: Once selected, assign attributes to that event.
BOTTOM: Add professional transition effects to any event.



GAME Busters



What are you doing reading a magazine? It's summertime! Get out to a rock festival, frolic in the sunshine, eat an ice-cream. Wait a minute – what about that maths revision you should be doing? Get back to those books NOW! ...still here? Well, all right then, if you MUST have a few tips and hints on those there new-fangled computer games, then who are we to disappoint you.

Here's the business on the new classic *Rainbow Islands* from Ocean, as researched by your very own *AF* team.

The latest and greatest hints and tips on beating the newest and toughest games, brought to you by the nicest and brightest **MAFF EVANS.**

THE END OF THE RAINBOW

You may have seen other playing tips that described every creature in *Rainbow Islands* in painstaking and pointless detail. The way we figure it you can work that stuff out easily as you go along – what you need to know is the helpful stuff about diamonds, secret rooms and cheat codes. Now that's Gamebusting.

GETTING THE DIAMONDS

You can blast baddies till you're blue-indigo-violet in the face, but the key to the game is collecting diamonds – but you knew that of course. Most important is collecting them in the right order – red first and violet last – because this reveals the secret room at the end of each island. So what are the best methods for doing that?

There are two basic ways of turning creatures into diamonds: killing them by crumbling a rainbow near them or destroying them with magic stars. However, you also have to make the diamond land on the correct part of the screen to make sure that they are the colour you need.

The screen is split into seven vertical strips – red on the left, through to violet on the right. The baddies spin in the same direction as they were moving when they were killed and if they fall too far out of view off the bottom of the screen they will disappear.

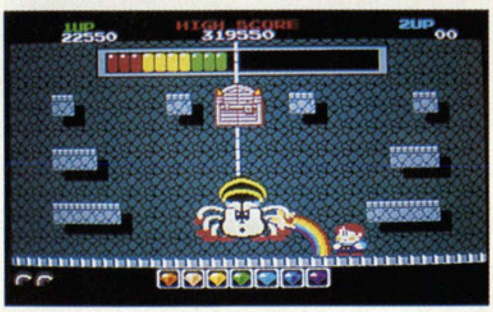
It's important to remember that bad guys don't have to be underneath a rainbow when it is broken, just near enough to it. This is very valuable because you can shoot rainbows underneath things without alerting them to your presence or risking getting shot. However, with things that can't fly or shoot on the first couple of levels, it's easy to trap them under a rainbow and just stomp on them.

THE SEVEN BOSSES AND SECRET ROOMS

By revealing the secret room you can avoid having to kill off the boss on each island. You can either try to jump straight in through the door or you can take the difficult route – kill off the boss and then go in, thereby getting more bonus points – but don't get killed or the door disappears. The secret rooms provide big bonus points and permanent special powers.

INSECT ISLAND

You should not have too much trouble killing the spider without losing a life and in the secret room you will find speed-up boots – which, like all the other powers in the rooms, you will then retain even after losing a life or losing a credit.





COMBAT ISLAND

Once again it's worth going for the kill on the helicopter as well as going through the door, behind which you will find permanent double rainbows.





MONSTER ISLAND

Dracula is one of the toughest bosses and worth avoiding if you think you might die, particularly because the bonus you get in the room is permanent fast rainbows. Just leap straight up the middle of the screen and get in the door before Drac even appears.





TOY ISLAND

The jack-in-the-box who whirls around the screen is also worth giving a miss. Once again you can just leap into the door before he appears and get the wings that await. These are important because the next island is lousy with areas that have very few platforms, which means flying up is very useful.





DOH ISLAND

Our old friend Doh is a doddle if you have the wings – just float next to him and pile the rainbows in. You can do it before he even gets a shot off. It's another important room to get into because it gives you a continue option for the last two islands – without it you will not be able to use remaining credits. There is also a 'Warp to Level Seven' option, but that deprives you of an important bonus from Level Six.





ROBOT ISLAND

Another tough boss because of the lack of platforms, but if you learn his pattern it isn't too bad. Trouble is, after getting this far, do you really want to take the risk? No, me neither. Behind the door is the very useful fairy, who makes surviving the last island and getting the diamonds a lot easier.





DRAGON ISLAND

When you're this close why bother with the dragon: just get into that door for a massive score bonus and the congratulatory screens.







THE CRUCIAL CODES

At the top of each secret room you will find a row of eight symbols. They correspond to letters which, when typed into the title screen featuring the colour-cycling rainbow, will give you a special bonus for the game.

The codes you get from each of the seven rooms are as follows:

Island 1 – BLRBJSBJ – fast feet
Island 2 – RJSBJSBR – double 'bows
Island 3 – SSSLLRRS – fast 'bows
Island 4 – BJBJBJRS – hint A
Island 5 – LJLSLBLS – hint B
Island 6 – SJBLRJSR – we don't know what it does!
Island 7 – LBSJRLJL – continue on all rounds

Hints A and B also pop up during play, but only tell you about collecting the diamonds. When you have typed the code in on the rainbow title screen, click up a credit and an icon should appear in the bottom left of the start screen – as the red bottle has in our screenshot. That is then operative throughout the game, but you will have to re-enter a code after all the credits have been used up.



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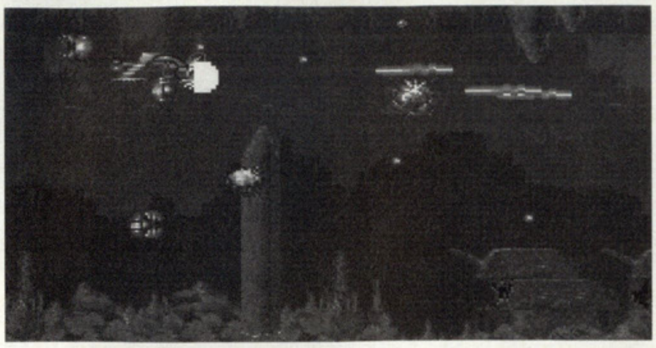
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X-OUT

Following the tip last month that oh-so-many people sent in after playing the demo version on our wonderful Coverdisk, here is a cheat for even more money (cor).

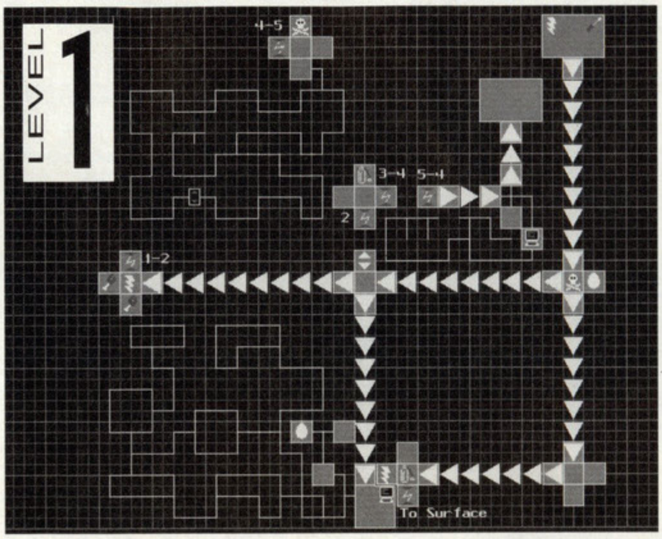
Quite a few people have written in to say that at the end of the game a message appears revealing the items to use for 500,000 credits. Buy the most expensive ship and the cheapest satellite, then discard the satellite over the horned beastie on the right. Now look at all the dosh you've got!

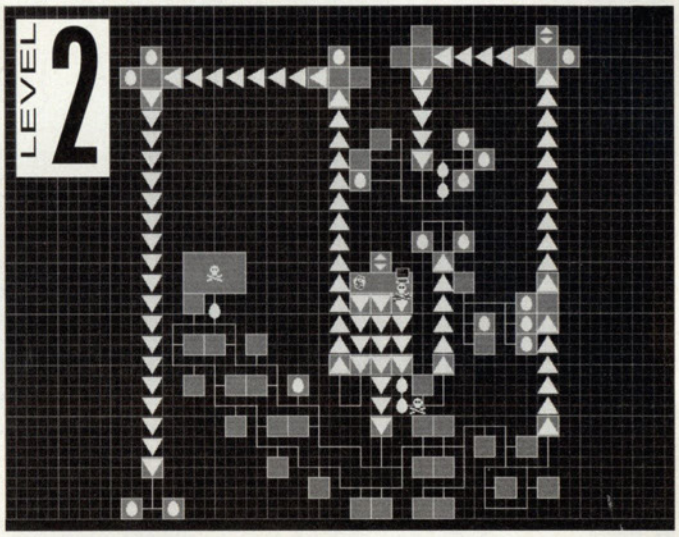
Loads of people,
All over the place

ROTOR

Flying a state-of-the-art gunship may be an attractive proposition, but it's not much fun if it keeps flying into walls all the time. If you want to access the higher levels

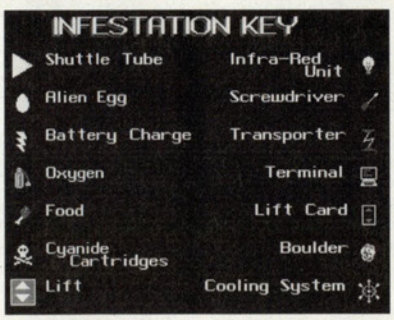
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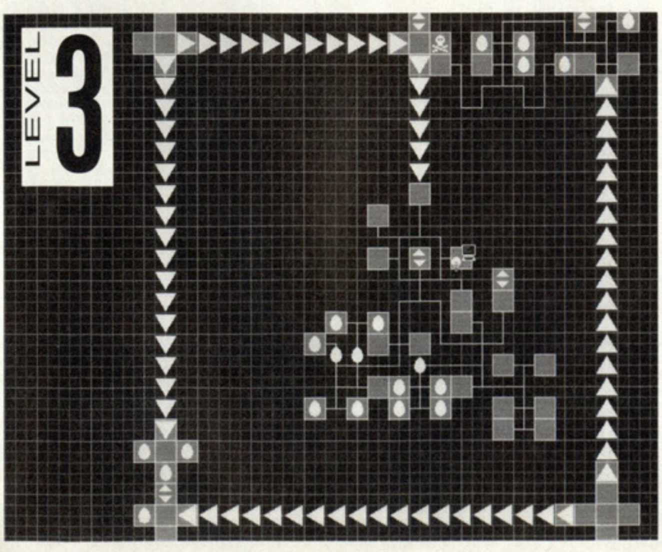
It's all very well buying a game with fast 3D graphics and involving gameplay, but what if you can't even get into the complex to see them? Never fear, help is at hand...

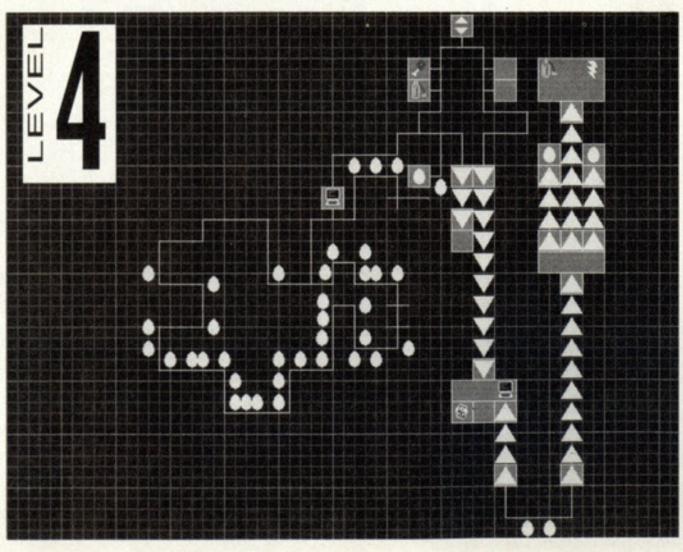
To gain access to the complex, simply find the terminal on the surface (the coordinates are about 90,30) using the MMU and plonk yourself in front of the screen ready to 'interface', if you know what I mean! When the screen asks you for an access code, type in KAL SOLAR and the on-screen message should tell you that the transporter has been activated. Now zoom back to coordinates 50,50 (next to one of the radar towers) and enter the transporter in the direction of the arrows. The screen will dissolve and you will reappear inside the complex. Now to get your hans on them there alien egg thingies!



Your suit uses Oxygen and battery charge at a rapid rate, so keep your helmet up and power off as much as possible. However, always check the atmosphere and radiation level of a room while protected by your suit before chancing the elements, and make a note of poisoned areas and vacuums for future reference.

Most of your travels will be via the ventilation ducts, which are all covered by gratings. To get into them you need a screwdriver, which is in the hangar at the top left of the complex. Collect it, go to the network at the top of the map (using the transporters) and pick up the lift card. Go to the lift in the middle of the map and down to Level Six. Find the cooling system and switch it on to prevent the reactor from overheating too quickly. Now go for the eggs! Maps sent in by Lee Dobinson, Southend on Sea.





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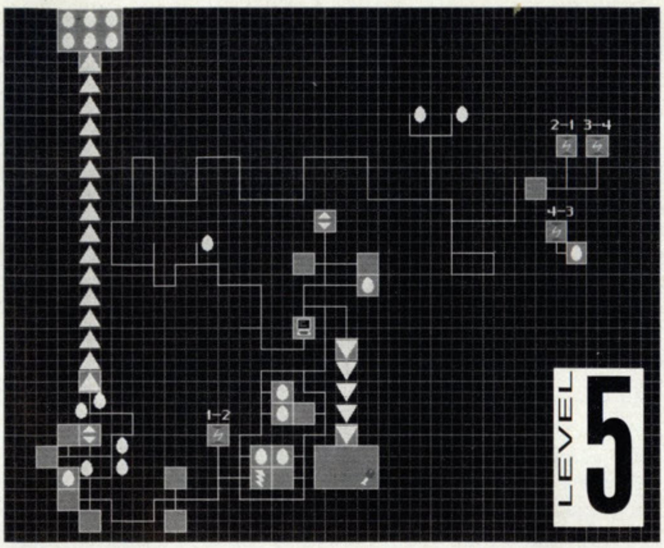
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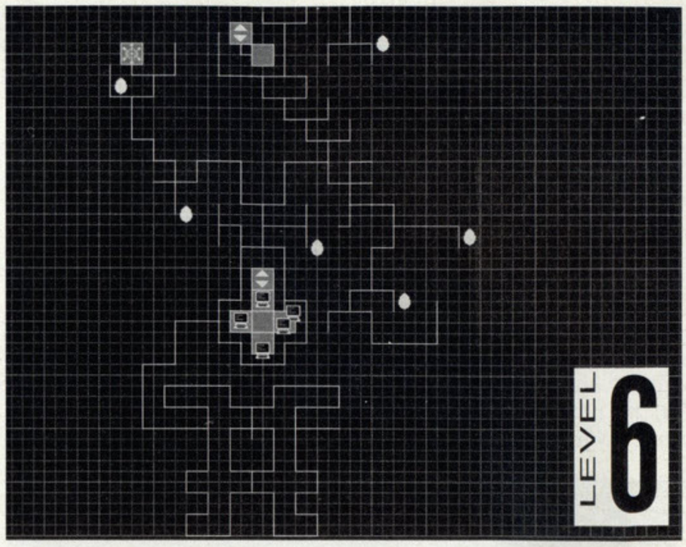
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but don't have the expertise to get to them legitimately, then try these level codes:

1 – GAG
2 – LIP
3 – SLY
4 – MEN
5 – AWE
6 – TNT

Another code which allows access to the Battle Simulator is PIT. So now you know.

Scoon,
Richmond, North Yorkshire

SUPERCARS

How many budding drivers out there would like to wipe the smug smile off that car dealer's face? Well if you enter your name as RICH at the start of the game, then you will have 500,000 spondoolicks to wave at him. If you still can't get to the second level, then enter your name as ODIE at the start or even better BIGC to gain access to the third stage.

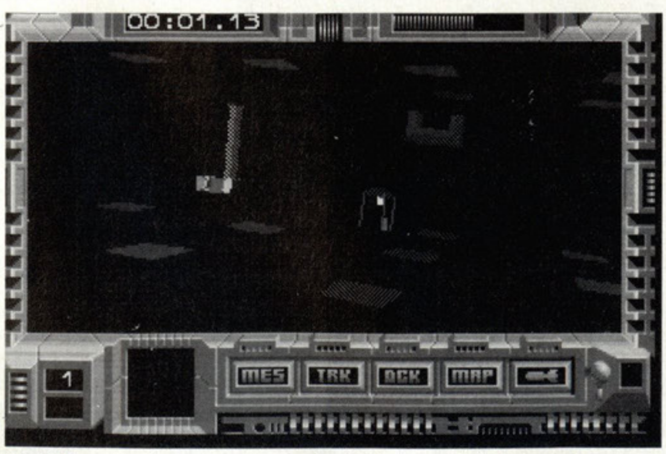
Gary Smith,
Potters Bar, Hertfordshire

ROCK AND ROLL

It seems not a month goes by without a tip for Rainbow Arts' roll-around puzzle game! For this one, just get into the game and find the 'special hole' on Easy Living (Level One). It's just after the spade, in front of the dead-end beneath four left-pointing arrows. Found it? Good. Now simply fall down the hole and... nothing happens. Not until you press the left mouse button anyway, at which point you will find yourself on Level 33. Yes, 33 – one after the last level!

Simon Goodway,
Houghton on the Hill, Leics

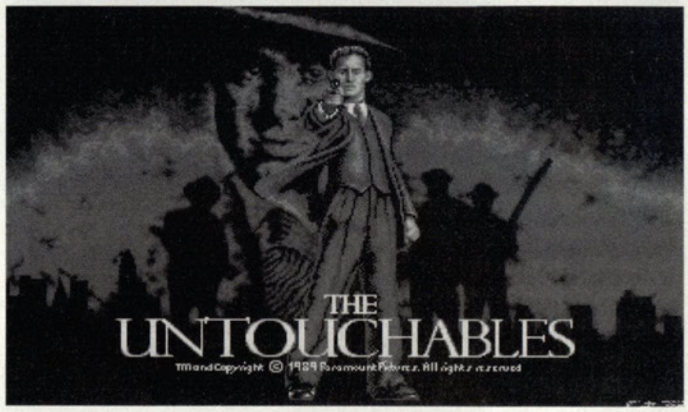
INTERPHASE



Most 3D games have some sort of object viewer, so where is the one for Interphase? All you have to do is start the game and type in 'Fenny' (remember to use Shift for the F). A message should appear telling you that the code has been accepted, in which case use the left mouse button to cycle through the objects.

Matthew Jones,
Bishops Waltham,

UNTOUCHABLES



We'd all like to be heroes like Elegant Mess in the film, but even in Ocean's licenced game things can often go wrong. Some tips my good man, and don't spare the lemons!

First of all let's get the obvious cheats out of the way. If you type SOUTHAMPTONGAZETTE, you can press F10 to skip levels. Pressing 'Help' on Levels 2, 3 and 6 puts you half-way through the level.

Even with a cheat it can be quite hairy with all those guns going off, so here are rough guides to the levels.

LEVEL 1

Duck down when things get heated, as only the book-keepers' bullets come in low enough to hit you. Only pick up violin cases when it's really necessary, as they can help you out of a tight spot, but they're in short supply.

LEVEL 2

Go for the liquor bottles first and shoot the First Aid boxes if your energy gets a bit low. Particularly dangerous villains to watch for are the bottle-throwers.

LEVEL 3

Always come out from behind the wall and fire quickly, going for the grenades thrown from the cars first. Be especially careful of the men with machine guns.

LEVEL 4

Try to keep to one side of the baby's pram, and don't walk into anybody. Oh, and watch for members of the public – we don't want innocent bystanders hurt, do we?

LEVEL 5

Shoot the plant pots for more life and be quick taking out the men that run across the screen. Spend as little time loading your gun as possible, as the criminals can do a lot of damage in that time.

Duane Baird, Balham, London

OH NO! IT'S THE PATHETIC TIPS!

Having a section to help game-players in distress may be comforting, but you should see some of the letters that people sent in! That's a thought... why not have a look at some of the most ludicrous stuff we've received over the past couple of months??

SHADOW OF THE BEAST

One tip that has caused quite a few problems. We've received a lot of letters detailing the 'hold the buttons down' cheat for infinite energy with all manner of variations – the most complex from someone in County Armagh who says that you have to hold the joystick and left mouse buttons down until the second disk has loaded, let go of the joystick button and put the first disk in. The program should in theory ask for disk two and load up with the cheat active. Well, it's time you knew – ALL these methods are wrong. The cheat only worked on pre-production versions, so everyone that sent it in has made a slip-up. We know that you've got naughty versions of the game AND we know where you live! The boys are on their way...

WINNERS

A remarkable lack of substantial tips this month. It seems that cheat modes are the in thing, with the same ones appearing from about six different people. So there are only two winners this month – Duane Baird for his *Untouchables* tips and Lee Dobinson for his excellent *Infestation* maps. Vouchers will be on their way soon!

TRAINED ASSASIN

Someone from Cardiff has come up with an interesting idea – cheats that cause games to crash. On his demo version of *Trained Assassin*, typing KILL on the title screen causes a screen full of code to appear which can't be exited, but he stresses that it 'might' work on the finished version. Yes, and I might be a millionaire one day, but the chances are slim!

KICK OFF

Not one, not two...wait a minute, yes it is two... two letters from the same young man on the subject of *Kick Off*. He says that if you keep hold of the fire button when a penalty is being taken against you, then the goalie will save every shot. Well, trying this out on our copy has the extremely useful effect of getting you thrashed when the other team scores every time! All I can say is that this tipster has an unnerving knack of cheating the law of averages!

APB

If it didn't have another name at the bottom of this letter I could have sworn that it was from Mr Statethebleedingobvious. He says that if you hold down the fire button to keep the siren going in *APB*, then the other cars will move out of the way. But that's the whole point!

BATMAN

One last thing. We seem to be getting an awful lot of letters telling us the cheat for Ocean's *Batman*. The only trouble with this is we've already printed it, way back in the February Issue (Issue 7) along with a comprehensive set of maps. No more *Batman*, please!

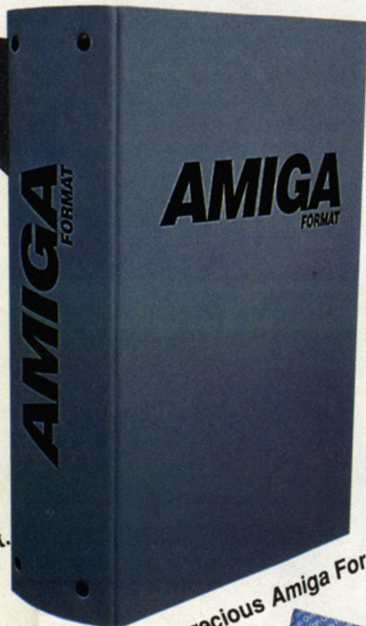

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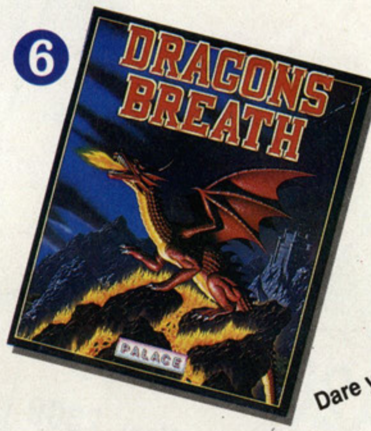
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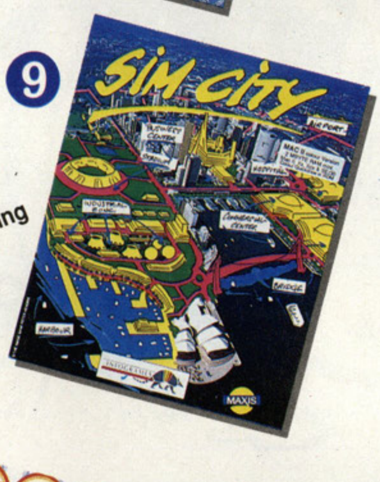
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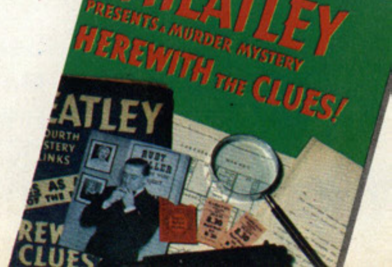
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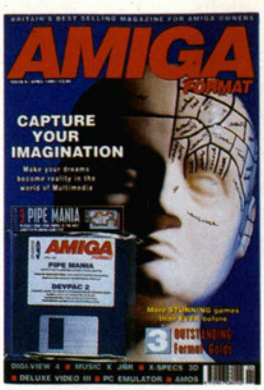


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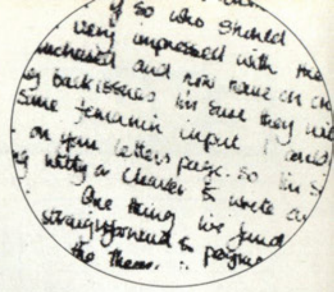
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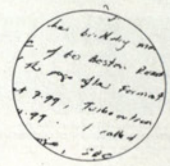
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Letters

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PIRACY IS THEFT

PRIZE LETTER

I was disgusted to read Anon's letter in Issue 9. What would he call it if a thief broke into his parents' house, stole his Amiga and when he got caught said, "I wanted the best home computer but I didn't have the money to buy one"? I think that he would call it theft. The majority of Amiga users have never subscribed to piracy in any form and I for one, never will.

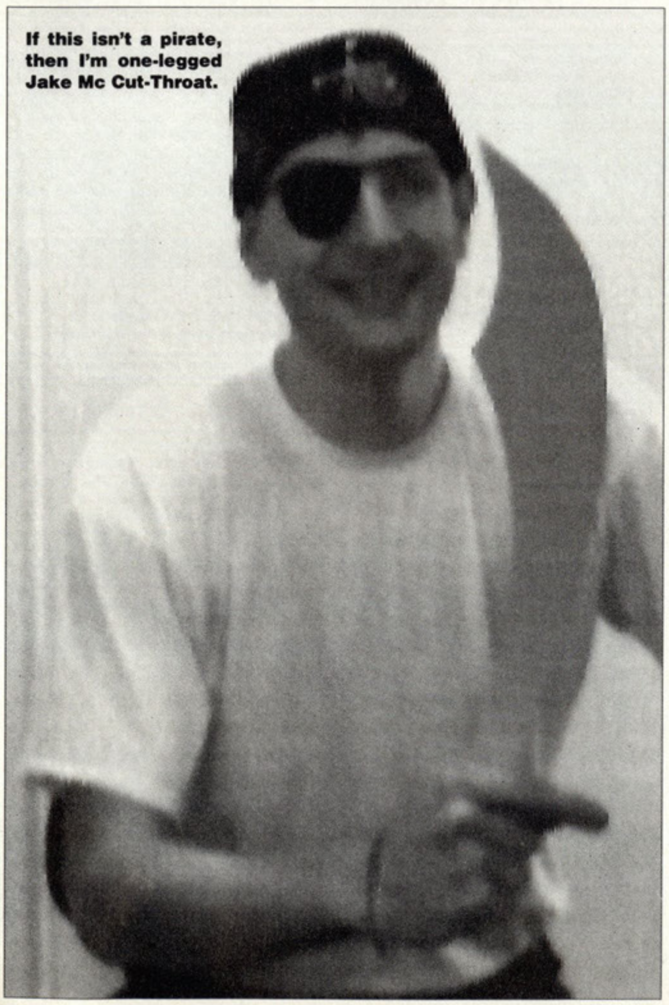
The writer seems to be suffering from "I want it all and I want it now" syndrome. Being unemployed I cannot afford to rush out and buy every piece of software that I see reviewed and would like to buy, so I wait until I have enough. If he is so concerned about piracy why doesn't he get a part-time job? It wouldn't interfere with his schoolwork and he could put so much into a savings account if he needed a social life and anyway, what does he mean by being 'concerned' about piracy? Maybe he could write another letter and explain and also tell us how old he is. I see the writer of this as a pimply 14-year-old who does not know the meaning of the word patience.

Why do software companies put their products in boxes that are far bigger than needed? The worst example that I have is *Hard Drivin'* by Tengen. In a box that is 7.5 inches long, 6 inches wide and 1.5 inches deep comes the standard 3.5 inch disk. If it were made of cardboard I could put the disk in a file and recycle the packaging but as it is made of plastic I just have to keep it. This a criminal waste of the earth's resources, so if there is any member of a software company reading this please try and make use of your packaging materials in a more environmentally friendly way.

David Carver
Bridge of Don, Aberdeen

Two excellent points that I wholeheartedly agree with. Just because you have bought a computer does not give you a divine right to have every bit of software for it – you want it, you pay for it like everyone else.

Your point about packaging is also very relevant. Packaging has gone over the top, mostly it seems because the software houses seem to be in a war of escalation to outdo each other on the high street shelves. Sense should prevail and bring us back to boxes which fit a disk, instruction booklet and as little air as possible – space = waste.



If this isn't a pirate, then I'm one-legged Jake Mc Cut-Throat.

SHOP COP

I agree with you that people like Mr/Mrs Anonymous (Issue 9, Page 143) do not care about this overgrown problem of piracy. With their opinion that 90% of users are pirates I also agree with you that this is drivel, but how much so? Most computer stores that I go in copy software from time to time. For what use, I don't know. At one time, when I entered *********** and took notice, they turned off the screen. It was so obvious what they were up to.

Another instance was when I went into **********. At the back of the store there were two young men, one was copying the originals the other one was testing if it worked! I consider this to be unacceptable and FAST should take a closer look.

Why are the employees of these companies so untrustworthy? They are in a very responsible position in ensuring that this kind of thing does not happen, but they go ahead and do it! It does not take many people to ruin the software business, more so than it is already! This is not only happening on the Amiga side but on the ST side as well. Not many of the users I know do not possess ripped off software.

These copying devices are sold to people who aren't capable of making an honest decision for themselves not to rip off software. You can not just say they are capable of deciding for themselves they -are plainly not. They are selfish and immature.

Tom Haslam
Birstall, Leics

We have removed the names of the shops you mentioned because we would find a law suit slapped on us pretty sharpish otherwise. The points you make about copying devices are valid, but it is down to the law to deal with them by making them illegal.

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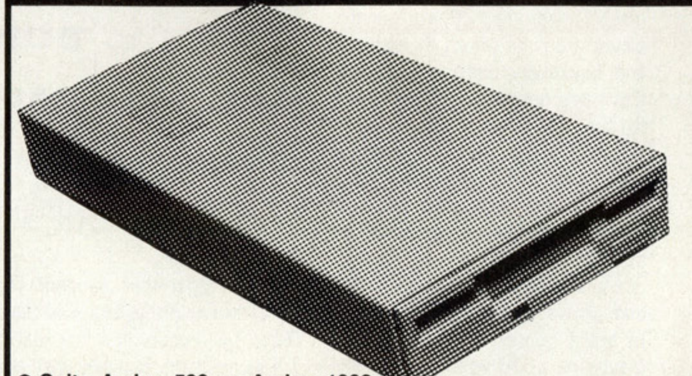
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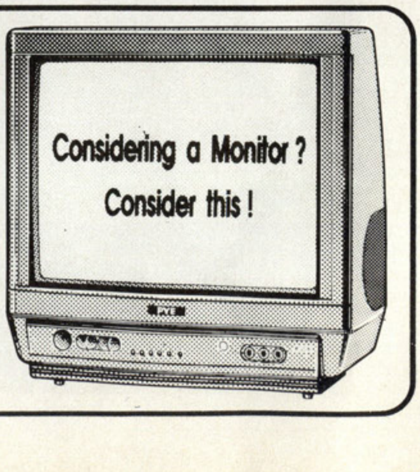
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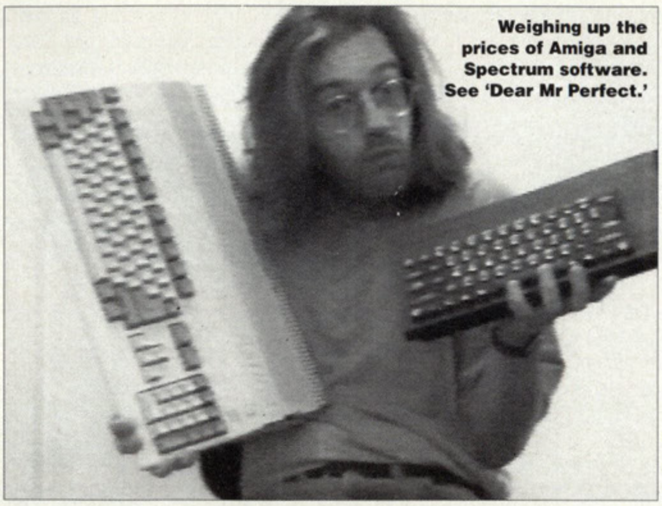
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Weighing up the prices of Amiga and Spectrum software. See 'Dear Mr Perfect.'

tracks available for the game and if not, maybe we should put some pressure on those responsible to release some.

Binesh Lad
Exeter

Brilliant idea. It's a game that thoroughly deserves more levels. How about it Microprose?

BORING ADVERTS

Although I like your magazine I would just like to point out that your advertisers tend to use the same pictures on their adverts all the time. Which gives the impression that every new issue released is virtually the same as the last one. Could you suggest to them a change of pictures especially on the longer-running adverts.

Andrew Meeke
Idle, Bradford

In general I would agree with you, there seems to be very little real adventure and experimenting going into advertising these days. People seem to stick to safe formulas instead of finding exciting new ways to promote things.

DUPLICITOUS?

What's going on, *Amiga Format*? On the 24th March at 11pm I was using the Coverdisk from Issue 9 of your magazine. I was just putting it into the drive when something quite insignificant caught my eye.

In the light it appeared that something was written underneath the label and on closer inspection it was revealed that there was another label underneath your *Amiga Format* label.

Very faintly the words 'Power Pack' and 'disk one' could be seen so I decided to try to remove the label to see exactly what it was. this was not very successful and resulted in the removal of of both labels which were both stuck together. But looking on the reverse of the label I could clearly read 'Atari', 'Power Pack', '*Bombuzal*', '*Bomb Jack*', '*Xenon*'.

As a result of this event I feel I have to ask you the following questions:

1. Has this disk been inside an Atari ST drive? (Is this how disks catch viruses?)
2. Was it an April Fool?
3. Is there a prize for finding it?
4. Was the original label put on by mistake, do you think?
5. If the disk did belong to an Atari Power Pack, why was it formatted to be used by you instead of being given away to a children's charity or similar who I'm sure could have made good use of it?
6. Have you run out of blanks?

I don't know if this has happened to anybody else, but I was quite vexed about this.

Andy Newbury
Bournemouth, Dorset

Quite a few people spotted similar disks, but there is no call for alarm. Our duplicators are merely recycling disks that were not sold in their previous incarnation. Reformatting them to the Amiga wipes off all previous material and makes them no different from any other disk.

DEAR MR PERFECT...

Right, I'm writing about the letter in *Amiga Format* Issue 9 entitled "A Thief Writes..". I agree totally with what the writer says, because the price of software is ridiculous.

I used to own a Spectrum, and I used to go out and buy one or two new games every week, because they were affordable, but now, after spending over £800 on my Amiga set-up, I just can't afford to pay prices like £20-25 per game. And another thing, How is anyone supposed to afford over £ 300 for a program like *Sculpt 4D*?

I think that if the prices of software don't go down quickly, then soon there will be no computer games, because the programmers won't be able to afford to write them, because they were too greedy in the beginning, Just think of the difference if games like *Blood Money* and *Xenon 2* had been sold for £7.99 each. They would have sold thousands more copies, and probably, the software houses would have made more profits as well.

Anonymous

AGONY AUNT

Recently I started a sort of Pen Pal Club with the aim of helping Beginners and learners on the Amiga. I'm calling it Fat Agnus Agony Column or FAAC. I'm pretty much a learner myself though I have just about grasped the basics. Plans are to Build up a mini PD Library of Tuition Disks and put together some fact sheets on simple Amiga Principles. So far I've had a good response but the more the merrier!

So if there's anyone out there who's losing sleep over Basic or CLI or anything else, join FAAC. Everything will be free! NO charge for joining or anything else! Here's my address.

Andy Klyen
77 Hartham Rd, Isleworth,
Middlesex TW7 5EY

Selling more does not necessarily mean making greater profits. As for the comparison with Spectrum games, you can't seriously be suggesting that the average Spectrum game had the sort of development put into it that most Amiga software does. The issue of pricing levels never has and never will justify piracy. As an earlier correspondent pointed out, you have no god-given right to software, it has to be paid for like anything else.

Oh yes, and I don't think I'm perfect, I just try to keep within the law.

BETTER DAYS

I would like to raise a few questions re arcade and computer games. In my school and student days most games seemed to be what I will call heavily disguised violence in the form of *Space Invaders, Defender, Phoenix, Scramble, Donkey Kong* – need I go on?

But wander into an arcade now and you're assaulted by an array of games displaying undisguised violence, where the protagonists are now specifically human, starring in martial arts/combat games with murderous intent. The graphics have improved compared to yesteryear but I wonder at the corruption of the fantasy life by the incessant bombardment of this material. While I do not subscribe to the New Age/Humanist philosophy that man by nature has the capacity and intent for good, I do not believe that it can be to the benefit of society that this micro-chipped savagery should go unquestioned.

Another point is that as a new Amiga owner and fan of the old arcade games mentioned, I am finding 16-bit shoot-em-ups interminably boring in that there is little reward or variety in the game play. *Batman the Movie* is completely dire, *NZ Story* the first seven or so levels are all right but afterwards completely uninteresting, *R-Type Xenon* or *Xenon II, Rick Dangerous* etc all pale within minutes. Were it not for pirated copies, particularly of *NZ Story*, which allow access to any level thus preventing terminal boredom in having to play through conquered levels again and again I would give up on games completely.

Angus Bell
Killingworth, Newcastle

WHERE'S MY MAG?

I have a subscription with you for *Amiga Format*. I have received it every month so far, but, as yet, I am still to receive my April issue. My March issue arrived on 10 March, TWO DAYS AFTER the publication date of the April issue. This delay happens every month and I can not understand why my magazine is taking so long to reach me when a colleague receives the same magazine via a UK address, at least two weeks ahead of me.

GJ Walker
Royal Air Force – BFPO

The trouble is, your copy of the magazine comes to you in Europe or elsewhere in the world by surface post, which does take a while – though it shouldn't be quite as late as you seem to be getting it. On the other hand, you pay less for the magazine. You can phone our subs people in Somerton and change to Air Mail delivery, which costs more but is quicker.

VIRUS KILLER OK?

Would it be all right to kill the viruses on the *Space Ace* demo and *GMC* or would this completely destroy them?

John Steele
Bellahouston, Glasgow

I really hope you haven't done it yet, because under no circumstances should you let a virus killer rewrite the bootblock of a commercial game. They nearly all have protection systems and

messing with the bootblock will trash the disk. Just make sure they don't infect anything else.

RED CAT

As it's all the rage, here is our list of ten things we hate.

1. Mrs Thatchescu.
2. Cat fur in the hard disc fan.
3. Cat fur in the floppy disk drive.
4. People who ring off while we are explaining that we don't sell printers, just printout.
5. Cat fur on everything in the fridge.
6. Cat fur in the keyboard.
7. Human hair in the catfood.
8. Shoot-em-up games we can't play properly.
9. Chess programs that play like two year olds.
10. Almost everything else.

Chris and Sam the cat at Red Computers
Taunton, Somerset

Sam, I'm a little worried about your owner. If he gets hair in your food again, rip his curtains to pieces – it works for me.

AMERICANS GET IT CHEAPER

I am writing to express my anger at the extortionate pricing of Amiga software in this country. Comparing the cost of 'serious' software advertised in *Amiga Format* with the latest issue of *Amiga World* (American magazine) shows a huge discrepancy in levels of pricing. For example:

Professional Page 1.3 UK £19
US Price is $200 or £121
Excellence! UK£130
US Price is $140 or £85
Word Perfect UK £165
US Price is $145 or £88
Design 3D UK £70
US Price is $49 or £30
Sculpt Animate 4D UK £370
US Price is $350 or £212

Even *X-CAD Designer* which, I understand, is written in this country:

X-CAD Designer UK £90
US Price is $80 or £48

Even if one adds delivery, duty and VAT, I still am unable to believe th at Amiga software is being sold in this country at honest prices.

Robert A Jaryczewski
Backwell Hill, Bristol

There certainly is a large disparity there and one I am at a loss to account for or justify. Clearly the argument over the cost of games in this country is peanuts when compared to these sorts of figures across national boundaries.

PRICE RIP-OFFS

With games costing £20-30 each, which is a rip-off now Amigas are widespread, many people who don't want to spend all of their money on games will buy pirated software to save money.

One offshoot of the price of these games is the fact that if the Amiga screws up the disk – as it often does – you have to buy another £25 game or resort to piracy. What the software industry could do with is a safe back-up system, as seem in *Carrier Command.* In this commercial copies do not work, but the built-in one does. Coupled with a massive manual that costs a fortune to photocopy, it deters piracy. If this copying system was integrated with a 'key disk' system, piracy could be prevented but owners would not have to use the original disk. At the moment the only protection available is not formatting part of the disk that is not used so that copies think the disk has an error.

I have not come across the *Falcon* anti-copying system, but it shows programmers can do this type of thing. Another way to combat piracy is to lower the price of games to about £13, like disk games on the C64 or BBC cost. BBC owners did not buy as many games as Amiga owners do, so profits could still be made.

I would like to know the industry's justification when they say that £18 of a £20 game goes to 'production cost' and programmer royalties!

More people would buy games at £13 instead of £25 as an original, affordable at £13, has the guarantee if it is faulty – it can be replaced. A pirated copy can not.

Alex Garrod
Kingston St Mary, Somerset

THINK OF OTHERS

PRIZE LETTER

I am an Amiga games player with Muscular Dystrophy, a progressive muscle wasting disease, which means I am very limited to what I can do with my computer. I can use my right hand to a certain degree, and because of this I can't use just any joystick. At the moment I am using an old Quickshot Turbo. These joysticks have since been modified, which now means I can't use them, and the one I have could go at any time. If it comes to the point where I can't play on my computer, I don't know what I will do, as I can't do much else.

I was pleased to see, in the computer shop in my area, an excellent joystick – or so I thought. It was an analogue joystick. At the time I didn't know that the Amiga couldn't take such a joystick. I was saddened and very disappointed when I learned of this. Why do people make things so difficult? I wouldn't mind so much not having an analogue joystick, just as long as I had a digital one that was easy to use.

It seems to me that joystick manufacturers don't realize that there are disabled people like myself that cannot, I repeat, can not use most digital joysticks. I think there should be a range of joysticks for disabled people, so come on manufacturers, make an effort please!

Craig Shakeshaft
Bridgend, Mid Glamorgan

PS Are there any people that know of an interface to enable the use of an analogue joystick with an Amiga, that's compatible with all games?

Jason tells me that the Amiga can support analogue joysticks, but it does depend on the software supporting it. Currently Flight Sim II *is one of the few games that does...*

BIRD'S-EYE VIEW

With reference to the letter published in Issue 9 of *AF* from Mike Pitchers concerning the use of analogue joysticks for *FSII*, can I also confirm that he is correct. As a qualified private pilot I would also like to agree with his comments concerning the feel of real planes. Indeed I found your news item on Page 7 a little worrying as well: while I agree in principle with what is said, I think the idea of inspiring future pilots for jets overlooked one factor, i. the small point of 'G'.

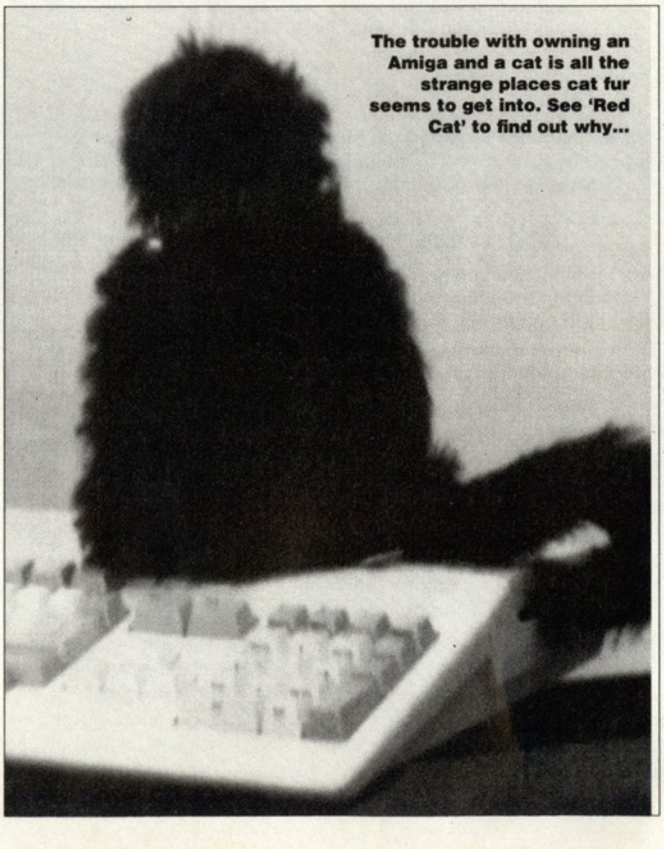
Next time you fly *F-16* or *Interceptor*, just take a look at the 'G' meter readout. This is (I presume) a fairly accurate real life figure which real life pilots feel. In a small plane you can manage about +\- 2G during sensible operations (higher in aerobatics), and even these forces can be unpleasant, especially the negative one!

Furthermore, I find that the approach to land in these programs can be very strange to the real life, indeed I can say with shame that I crash more often trying to land than from missile strikes!. Fortunately for my family and insurance policy I do not suffer this in real flying, (the landings I mean, you don't get many SAM sites in Essex!) However *FSII* is much easier to land and allows hard-up pilots like me to practice fairly realistic instrument flying/night flying.

J L Mills
Chelmsford, Essex

DON'T STEAL IT!

I have owned my Amiga for two years. Now, when I first had it I used to buy original games for it, but about six months ago I was forced to leave my part-time job to study for my 'A' levels. I found myself down £35 to just £5 a week and I could no longer afford to buy originals, but my software collection has doubled since I lost

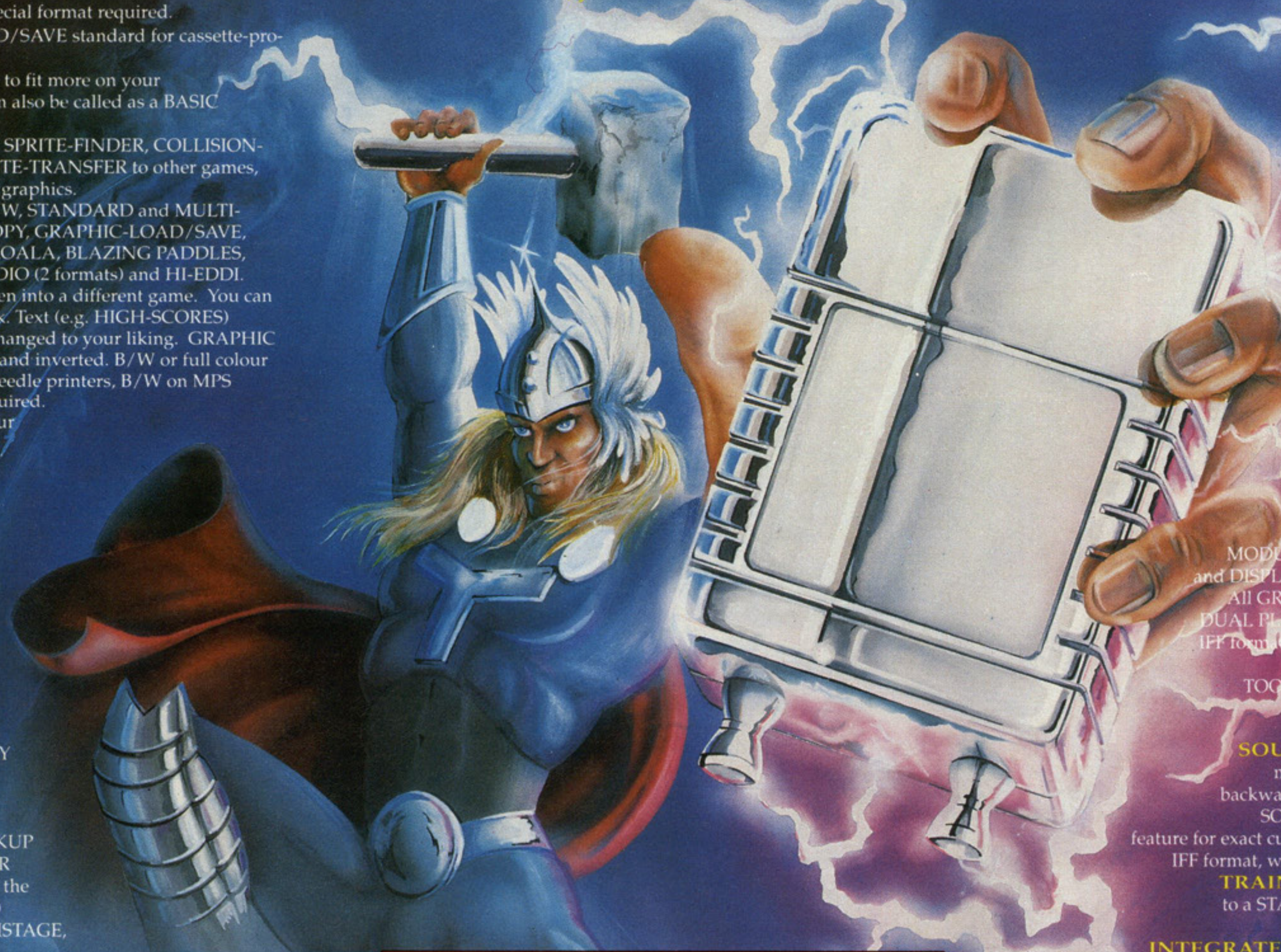


The trouble with owning an Amiga and a cat is all the strange places cat fur seems to get into. See 'Red Cat' to find out why...

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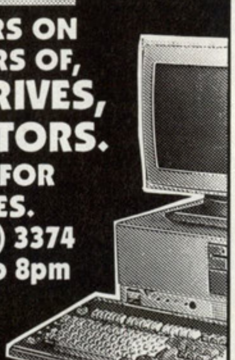
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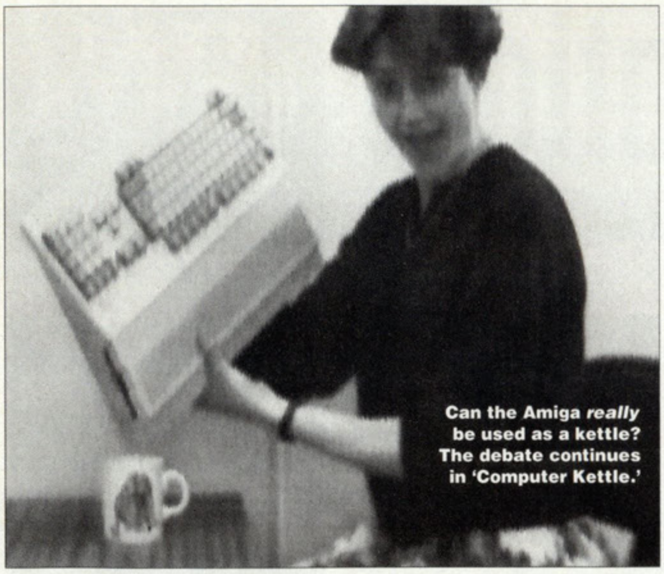
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Can the Amiga *really* be used as a kettle? The debate continues in 'Computer Kettle.'

my job, through copying cracked games.

Don't get me wrong, though, I have decided to stop stealing others' money by refusing offers of cracked games, and I think that if the other pirates were to take this attitude the price of games would consequently plummet, and that would be good news for everybody I 'm sure you'll agree.

Since I have stopped pirating I find that I actually enjoy a game more when I pay for it, so come on all you other pirates wise up... and anonymous from the April Issue I mean you!

Ashamed
Port Talbot

COMPUTER KETTLE

Why do you have boring little things written on the spine of your magazine. I bought the first copy of *Zero* (only 'cause it had a free game on the cover, you understand) and it informed me that Brian Trubshaw was the first commercial airline pilot to captain a British Airways Concorde. This is far more individual than Surreal Thing or Mindfield. So how about some long-winded little things on the spine of *AF*.

How much 'leccy does an A500 use on average per hour as my mum's excuse for not letting me compute all day is that it costs a ton?

Why haven't you got an ABC figure? You can apply for one after six months, you know.

In reply to Karl Drinkwater's letter in your last issue you can use your Amiga as a kettle as the water comes out quite hot and you won't get electrocuted if you wear antistatic wristbands, hold any metal pipe and pretend you're a qualified satellite and TV engineer, probably. Also I had a squeaky mouse and I bought a replacement. It squeaks perfectly now but tends to be a bit unresponsive and it doesn't fit in to the mouse port. Is there no way to buy decent products these days?

Sam Cadby
Stoke Newington, London

We have enough long-winded little things inside the mag without putting them on the spine as well.

Mothers are always right, don't argue with her – just try to convince her of the educational value of playing Kick Off *all day.*

We have got an ABC figure, you will find it on the Contents pages.

YOU LIKE LISTINGS?

As I have been in receipt of a retirement pension for almost eight years, I can probably claim the dubious distinction of being a little older than your average reader. You will have to take my word for it that being a pensioner rather restricts one's power to go out and purchase software costing anything between twenty to one hundred pounds every few weeks. With the limited knowledge of Basic programming I have therefore, the uses one can put a computer to are also limited.

I search the stationery shops in vain for a periodical which offers listings of game, utilities and programs for the reader to key in. Wouldn't you like to be the first magazine to do this? Nice change to give readers something to do at no extra cost rather than continually exhorting them to go out and spend. You are always asking readers for their submissions – why not ask them for listings?

W L Evans
Emsworth, Hants

We have the disk on the cover precisely to free everyone from the scourge of listings. The appalling business of typing something in for several hours and then finding there's a misprint or that it's continued next month! Besides which we would be accused of taking up pages with cheap, space filling listings. Sorry, but we will have to come up with something else to keep you busy!

TARGET – BIG SCREENS

I think that we, as Amiga owners, are generally agreed that we don't want programs that are limited to 16 colours just because some folk can only afford Atari STs and the software houses can't be bothered to do two versions. And thanks to a bit of pressure, we are seeing some progress on this front.

Well, here's the next target. Why should we be stuck looking at screens a fifth of which is blank? Just because our colonial cousins have an inferior TV standard, why should be in the UK suffer? The software houses will no doubt say that it's "not economic" to do both a PAL and an NTSC version, but in most cases the amount of extra work is small, and the truth is that they think they can get away with it as long no-one raises a fuss. I say it's time to start making a fuss.

You can help by noting in reviews which products have PAL screens. Criticise programs that suffer from inefficient use of the full screen and praise good screen layout. Readers can help by writing to software houses and pointing out how programs have been spoilt by not utilising the full screen area.

After all, we are the consumers, and it's up to us to tell the manufacturers what we want!

Roger Musson
Edinburgh, Scotland

CRITICAL

The reader should always dictate what is published in a magazine. After all, we pay your wages. This particular reader feels that a bit of constructive criticism is due as *Amiga Format* has been slowly falling from its former glory. The magazine is generally excellent, with the best news and hardware/software reviews. However:

1) The overall image of the magazine is childish. The covers are loud and unimaginative. The games reviews have gaudy primary colours and the layouts are often confusing and jarring to the eye. A touch more subtlety and finesse are needed.
2) What about some Basic and CLI tutorials? There are over 100,000 new Amiga owners since Christmas for this kind of help. How about an Editor's Comment section on the month's events?

The Disk: The quality of the disk has been going downhill for the past few months, with less and less USEABLE software. Don't try and level the "What do you want for £3?" cliche but have a look at 17-bit Updates. A good balance of PD games, demos and serious stuff for only £1!

1) The Game demo should be made less regular, perhaps one or two issues. I object to this cost-effective (cheap!) way of filling space, especially when the 200-300K to hold the demo could be put to better use. I resent giving up a third of the disk for something which is generally played once and discarded. If I wanted up-to-date games demos, I would pop down to the local dealer and see as many games as I wanted for nowt!
2) Greater interaction between the magazine and the disk is needed. For example, put the Workbench tips on disk and feature the best serious and best demo from the PD Update pages.
3) REGULAR graphics and music sections would increase appeal as the Amiga is used primarily for these applications. Perhaps if scores and screens that either the readers or section editors have created could be featured.
4) Product demos that do nothing or very little should be avoided eg *Mastersound, Argasm, Devpac 2.*
5) Presentation is shoddy with poor icons and unprofessional boot-up sequences. The use of a popular cruncher could fit upwards of 1 Meg on a disk and leave room for some of the suggestions above..

Fergal Moane
Belfast, N Ireland

The Magazine: 1) Comparing us with other mags in our market I have always thought we were rather well presented.

2) Basic and CLI probably, but these pages are where I get to make my opinions most clearly known on subjects that don't crop up in news and reviews.

The Disk: 1) The majority still favour game demos.

2) The interaction level is increasing and we will continue to combine editorial with the disk.

3) Graphics and music are very big space-eaters; we do do them from time to time but can't afford the disk space for them to be one every one.

4) They do do something if they are the sort of thing you are interested in.

5) This is improving – what do you think of Richard's new menu system? ■

Guru's Meditations

Consistently the least popular page in *Amiga Format*

CAPTAIN WHINGE

"...*of the Mutant Ninja Tennis Racket Nibblers* is just one of these ridiculously long game names that won't fit on a review page, I mean, they take up so much room that by the time you've fitted in *International Championship World Federation of Grand Prix Boxing Wrestlers vs Alien Dude Combat Simulator Part Seven*, there's only room for a two-word review – personally I think it's a conspiratorial plot by the software houses, they are going to make the titles longer and longer until not only is there no room in the mag for anything but game names, but the reviewers will fall asleep before even getting round to reading the instructions – and of course it means that packaging is going to have to get bigger to fit the game names on and still be readable, and we're all going to have to get 12-inch disk drives and double-width monitors, what's wrong with nice short game names like *F* or *4* or *(:)*, they're short, punchy, to-the-point and easy to remember when under pressure on *Mastermind* or waiting for a train or taking a..."

OH DEARY, DEARY ME

A bit of trub with some captions last month on the games pages – both *Typhoon Thompson* and *Manchester United* had a couple of captions reversed, sorry about that. I blame the caption fairies, but they have left a new Format Gold logo in return.

COMP WINNERS

An Omnibot is wheeling its way to Alma McDonald from Heolgerrig, Merthyr Tydfil – the winner of the Accolade comp in Issue Nine. The second prize of an Omni Jnr is on its way to Andrew Watkins from Pattiswick, Essex. The correct answers were (c) the Fiat Strada, (a) Robot and (b) Cybermen.

SPOOKY FACTS

■ All four editorial members of the *AF* team have their birthday on a Sunday this year. Spooky, huh?

■ Homer's *Iliad* may not have been written by Homer, but by another man... of the same name. Spooky, huh?

■ Anco have four football games - three of them with *Kick Off* in the title! Doubly spooky when you think that it will soon be the World Cup. Spooky, huh?

■ Commodore Business Machines is an anagram of 'IBM shame - Concorde's mouse sin.' Spooky, huh?*

■ Dame Edna Everage has never once mentioned the Amiga on her TV show. Spooky, huh?**

**Well, actually it isn't spooky at all, sorry about that.*

***Sorry, neither was that one.*

TRACK BALLS UP!

We made bit of a boo-boo in our review of trackballs in last months issue of *Amiga Format*. The company credited for the Atari trackball should have been Blue Sky Systems. Blue Sky can be contacted at 16 Sidney Street, Sheffield, S1 4RH (telephone number is 0742 738675). Apologies to all involved.

NEXT MONTH

The July issue will be on sale on June 14th and will be even more extraordinary than ever before. In a unique departure for a computer magazine, we will cover-mount not just the Coverdisk, but also an audio cassette. The cassette will contain material to back up a special feature on Music creation. This could be a good time to start realising your dreams of becoming a musician.

Once you've recovered from having your mind blown by this special event, we will blow your socks off with a look at footie games and the World Cup, swell your wallet with a look at accounts packages, expand your mind with Dave Jones' programming piece, put your joystick through the wringer in Screenplay and take you to new heights with *Real Things – Birds*.

Don't miss this one, otherwise you will never be able to tell your grandchildren that you actually bought a copy of Issue 12 of *Amiga Format* – a milestone in history, the event of the decade, more fun than a trip to the dentist's *(That's enough wibble – Ed)*.

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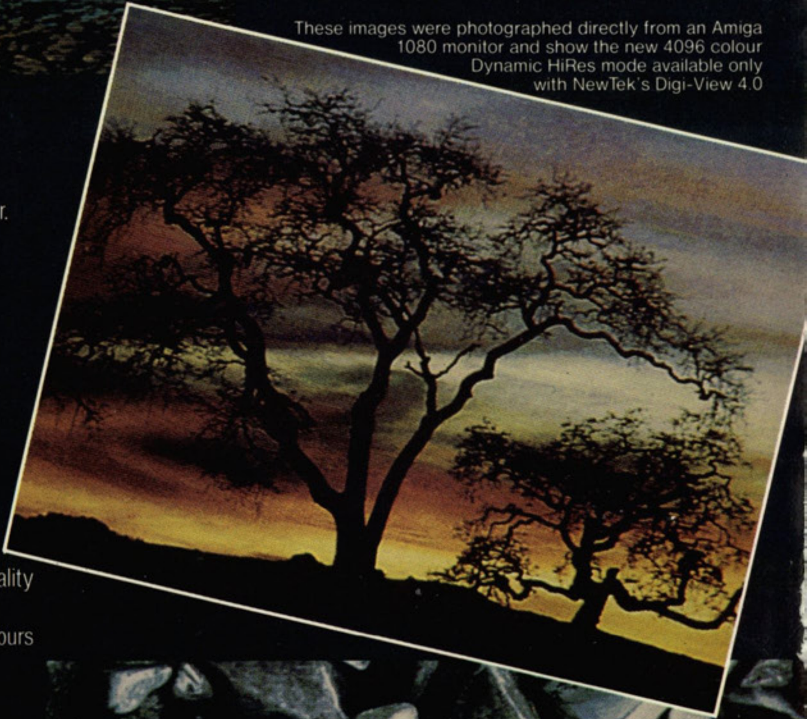
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